

BENJAMIN'S
American Hand Book
OF
CHEMICAL & PHYSICAL
APPARATUS.

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ANNEX

Section *Chem*

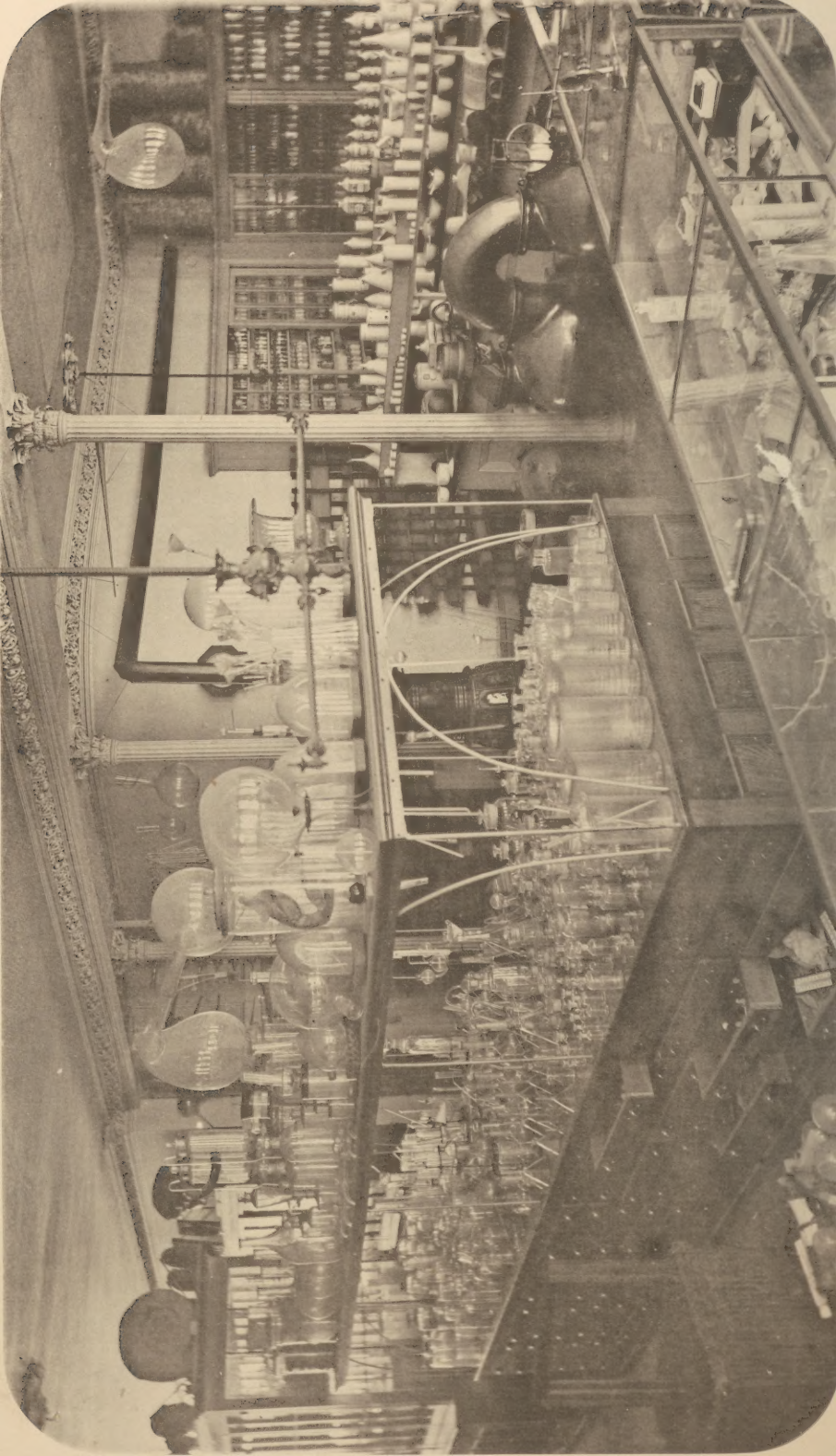
**Form 113c
W.D.,S.G.O.**

No. *74760*

U. S. GOVERNMENT PRINTING OFFICE: 1932

Chem
74760

see p 175



AMERICAN
H A N D - B O O K

OF

Chemical & Physical Apparatus,

MINERALS, FOSSILS, RARE CHEMICALS, etc.,

FOR THE USE OF

Schools, Colleges, Factories,

HOSPITALS, LABORATORIES, ASSAYERS, DENTISTS, PERFUMERS,
CHEMISTS, DRUGGISTS, PHYSICIANS, &c., &c.

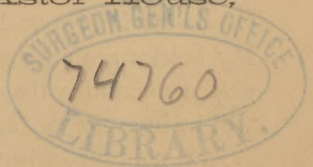
IMPORTED OR MANUFACTURED BY

E. B. BENJAMIN,

No. 10 Barclay Street,

Three doors West of the Astor House,

NEW YORK.



SOLE AGENT FOR

Ward's Plaster Casts, Trommsdorff's Pure Chemicals, &c., &c.

1872.

Annex
Q
185
B468a
1872
PREFACE.

IN response to the oft repeated and urgently pronounced requests of my large and generous constituency, I have much pleasure in presenting my first Catalogue to the kind perusal of themselves and the public.

From the nature of the work it will, I am sure, without any further proof, be admitted that a large outlay of money, and an immense expenditure of time, have been demanded. Very many of the illustrations now appear for the first time in this country, and most of the representations have been drawn from the objects themselves. The work has, consequently, been delayed far longer than was intended, and now, although the utmost care has been taken, I should not like it to be received as perfect. Doubtless some inaccuracies have crept in unawares, but these, I trust, will be found slight, and unimportant in character, and will, in consideration of the amount of work involved in the compilation, be gently criticized.

The classification of the articles will be, as far as possible, alphabetical; and, for the further convenience of those using the Catalogue, an Index is added. In this the articles are, without any regard to their uses, arranged alphabetically, with a number annexed, which refers to the page upon which a description of the article may be found.

It is well known that in apparatus which is imported, unimportant variations in form are always liable to be found. In this respect, it will always be my endeavor to secure the style which shall contain the latest improvements, and be the most effective in operation. My bottles are all made on my own forms, and I can confidently give a guarantee that every article named in the following pages will be in every way as represented.

In conclusion, I beg to thank those who have so generously supported me in the past, and to express a hope that this work will be found useful in our laboratories and factories, and indeed in the hands of any person who may refer to it.

E. B. B.

New York, July 1st, 1876.

ERRATA.

—:0:—

The following corrections should be made in my Catalogue of 1872.

- On page 46, No. 1252, for \$3.50 read \$5.50.
- “ 16, 17 & 18, “ 1389-1393 for Becker & Son's Balances read Troemner's and see new chemical list for corrected prices.
- “ 18, “ 1401, 3 in. for \$1.50 read \$2.50.
- “ 18, “ 1401, 3½ in “ 2.00 “ 3.50.
- “ 18, “ 1401, 4 in. “ 3.00 “ 4.50.
- “ 21, “ 1431, in nests of 1-12, per nest, \$4.50.
- “ 23, “ 1453, pints .90.
- “ 27, “ 1501, for 22 oz. read 32 oz.
- “ 28, “ 1515, strike out 3 and 6 oz. sizes.
- “ 30, “ 1528, 2 glbs., \$2.25.
- “ 35, “ 1602, for \$1.25 read \$1.00.
1603, for 1.75 “ 1.50.
1604, for 1.35 “ 1.25.
1606, with star 25 cents extra.
1607, for \$2.75 read \$2.25.
- “ 40, “ 1670, for 1.00 “ 1.50.
- “ 49, “ 1780, should read \$40.
- “ 52, “ 1810, “ “ unmounted instead of mounted.
- “ 56, “ 1869, prices are per dozen, instead of single.
- “ 59, “ 1890, should read perf. cover for gas reduction tube.
- “ 63, “ 1948, 50 cc, for \$1 40 read \$1.50.
“ 100 “ “ \$2.00 “ \$2.25.
“ 200 “ “ \$2.25 “ \$2.50.
“ 250 “ “ \$2.50 “ \$3.00.
- “ 65, “ 1975, is of the new form, having a glass shelf to support the triangle.
- “ 69, “ 2024, ½ gall. \$10.00.
- “ “ 2025, 1 gall., for \$14.00 read \$16.00.
- “ “ “ 2 gall., for \$19.00 read \$20.00.
- “ 77, “ 2120, for Tangent read Coulomb Torsin.
- “ 83, “ 2177, should read \$5.50 to \$9.00.
- “ 91, “ 2253 a, Filter Patterns, per set, 60c.
- “ 92, “ 2276, 1 oz. single piece, .10.
2276, 2 “ “ “ .12.
2276, 4 “ “ “ .15.
2276, 6 “ “ “ .20.
2276, 8 “ “ “ .25.
2276, 12 “ “ “ .27.
2276, 16 “ “ “ .30.
2276, 24 “ “ “ .35.
2276, 32 “ “ “ .50.

- On page 93 No. 2280, 4 oz. single piece .25.
 8 " " " .30.
 16 " " " .40
 32 " " " .60.
- " 94 " 2301, instead of German silver point read file on handle...
- " 96 " 2323, instead of 1 oz. read 8 oz.
 " " " 18 oz. " 16 oz
- " 102 " 2365a, Fletcher's gas furnace, 50 burners, for smelting iron and other metals, \$30.00.
- " 103 " 2375, read \$45.00.
- " 104 " 2382, strike out $\frac{1}{2}$ gall. size.
- " 106 " 2397, for \$7.50 read \$9.50.
- " 123 " 2604, for \$3.00 read with swivel \$4.50.
- " 127 " 2644, strike out words *and wire*.
- " " 2645, strike out *ditto* under *and wire*, and for \$3.25 read \$3.75.
- " " 2648, for \$4.00 read \$5.00.
- " 129 " 2693, for \$2.50 read \$3 00
- " 136 " 2838, for \$1.50 to \$2.50, read \$2.50 to \$5.50.
- " 145 " 2953, read \$1.75.
- " " 2954, read \$2.50.
- " " 2955, read \$4.00.
- " 148 " 2993, for \$1.50 read \$2.00.
- " " 2994, for \$1.50 read \$2.00.
- " 149 " 3001, prices are per doz. and not per single piece.
- " " 3002, prices are per doz. and not per single piece.
- " 152 " 3040, 1 pint, \$3.50.
- " 153 " 3057, for \$9.00 per lb. read \$5 00.
- " 159 " 3147a, Spoons, Blowpipe, of ivory, each 40c.
- " 165 " 3227, for \$1.50 read .75c.
- " 169 " 3306, for \$4.00 " \$10.00.
- " 170 " 3318a, Tips, Blowpipe, brass, each .10c.
 " " b, " " solid platinum, each .75c.
- " 177 " 3408, 6 in. \$5.50 per doz.
- " 178 & 179 Nos. 3417 to 3444, for Becker & Sons' weights read Troemner's. See new chemical list for corrected prices.
- " 181 Chemicals, see new price list.
- " 207 No. 3477, for \$7.00 read \$10.00.
- " " 3478, for \$12.00 read \$15.00.
- " 207 " 3479, for \$3.00 read with swivel \$4.50.
- " 211 " 3485, read series of nine minerals and strike out No. 10.—Diamond.
- " 211 " 3488, for \$ 6.00 read \$10.00.
- " 214 " 3504, " 10.00 " 12.00.
- " 241 " 3503, " 4.00 " 6.00.
- " 250 " 3667, " .250 " 7.50.
- " 253 chemicals, list of, for 101 read 181.

E. B. BENJAMIN,

10 Barclay Street, N. Y.

ERRATA.

During the printing of this book the following prominent errors were discovered :

- On page 52, No. 1801, for .75 read \$1.75.
" 52, " 1806, " drip read dip.
" 53, " 1815, " frictional read fractional.
" 63, " 1952, " gramme read cc.
and for the prices \$1, \$1.15 and \$1.25 each.
" 72, " 2054, The price is \$20.00.
" 75, " 2079, for \$9 read \$6.
" 79, " 2142, " \$6 read \$5.
" 112, " 2458, " \$35 read \$30.
" 119, " 2557, " actual measure read actual measures.
" 121, " 2585, " \$1.50 read \$2.
" 125, " 2635, " gauged read gauged.
" 126, " Illustration, No. 6241, read 2641.
" 127, " 2647, " 10 in. \$2.50 read \$2.00
" 128, " 2675, The price is \$2.
" 169, " 3304, for \$4.00 read \$3.50.
" 171, " 3343, " \$1 read \$100.
" 171, " 3344, " 50 cts. read 40 cts.
" 177, " 3401, The price is \$2.00.
" 185, " Alcohol ammoniated and amylic, for gal. read lb.
" 215, " 3505, for \$10 read \$15.
" 215, " 3506, " \$15 read \$20.
" 250, " 3667, " \$2.50 read \$5.00.
" 259, " Lippincott's vapor index, for 77 read 177.

N. B.—Prices of Becker's Balances and Weights are advanced about 10 per cent. from prices in this Catalogue.



NOTICE.

THE "Albertype" of a portion of my lower show-room, exhibited in the front of this Catalogue, was prepared by Mr. E. Bierstadt, of this city, expressly for this work.

The prices placed against the several articles in the following Catalogue are for United States legal tender, and are arranged upon so low a scale that net cash payments will be required for single pieces, except when otherwise agreed. These prices are, of course, subject to alterations, according to the values of crude materials and labor, and to the fluctuations in the foreign markets. For example, I am already advised of a prospective advance on Becker's balances and weights at the beginning of 1873, amounting to about 10 per cent. on his prices in this catalogue.

The charges of packing and shipping must, of course, be borne by the purchaser; and, in the case of chemicals, unless otherwise directed, these will be put into bottles and suitable packages, the expense of which will be added to the cost of the materials themselves.

Damages occurring by breakage or otherwise, in transitu, are never entertained in this business, nor can claims for deductions of any kind be allowed, unless notice of the same be given within six days of the receipt of the goods. In every case the signed receipt for articles in good order will relieve the supplier from all responsibility.

In ordering goods, it is desirable that full shipping directions be given, as otherwise the selection of route will be considered as left to my own discretion. The fullest description of goods is also solicited, particularly when (as may be done) reference is made to any well known foreign catalogue.

Having engaged the services of an experienced glass-blower, numerous styles of small apparatus, not specified in this Catalogue, can be well and expeditiously manufactured. When such are required, it is necessary that the directions contain carefully prepared drawings and accurate dimensions.

All kinds of apparatus can be carefully and accurately repaired on the premises by experienced workmen.

Valuable apparatus, imported specially to order, for moderate terms, on commission. When such are imported for scientific institutions, they are free of duty.

The large outlay of money incident to the publication of this work compels me to make a charge of \$1.50 for each copy. This will partially cover expenses, and will, I am sure, be cheerfully paid by any who desire to consult the work.

E. B. B.



Entered according to Act of Congress, in the year 1872,

By E. B. BENJAMIN,

In the office of the Librarian to Congress, at Washington, D. C.

CATALOGUE.

FOR numbers 1 to 1,248 reference should be made to the Catalogue of Dr. H. A. WARD'S Casts of Fossils. This collection contains accurately formed models, and embraces all that has been discovered in reference to the Animal Kingdom, in its various subdivisions of Vertebrates, Articulates, Mollusks, Radiates, and Protozoans. Full descriptions will be found in the Catalogue, which, as a work of reference, should be in everybody's library.

Dr. Ward having paid me the compliment of making this establishment a special, and indeed, independent of his factory, the only depôt where his casts can be obtained at the manufacturer's prices, orders are earnestly solicited for these valuable additions to cabinets and college collections. The specimens are well arranged and classified for inspection, and can be supplied singly or in series.

Special attention is called to these casts, and a cordial invitation is extended to all who may feel a desire to inspect them. The extraordinary energy and ability displayed by Dr. WARD, in securing and collecting, from the most reliable sources, these remarkable specimens of **past ages**, is undoubtedly entitled to the warmest encouragement and earnest support on the part of his fellow countrymen. His depôts, established in London, and on the continent of Europe, are already giving him important evidence of the appreciation in which the people of those countries hold his successful endeavors for the advancement of science, and it is earnestly hoped, and indeed confidently believed, that as soon as it shall be generally known that a depôt has been established here, the people of the United States will also extend to the Doctor substantial tokens of their approbation.

Professor OWEN, in his popular work on a National Museum of Natural History, says: "A fossil bone, and a colored plaster cast of it, are not distinguishable at first sight—scarcely by sight at all. The artificial junction of a series of casts of the bones of an unique

fossil skeleton, produces a result equivalent, for all the purposes of public exhibition, to the articulated skeleton itself. Thus, every capital in Europe, the public museum of each civilized community, may show to the people the proportion of the creatures of former worlds, that science has so restored."

PRICES IN CURRENCY.

1248A.—Absorptiometer, Bunsen's, for measuring the absorption power of gases.

\$50.00

1249.—Acetometer, Otto's, of glass on wood foot, for indicating the per centage of anhydrous acid in vinegar, acetic acid, &c.; graduated 0 to 12 in fourths.

\$1.50

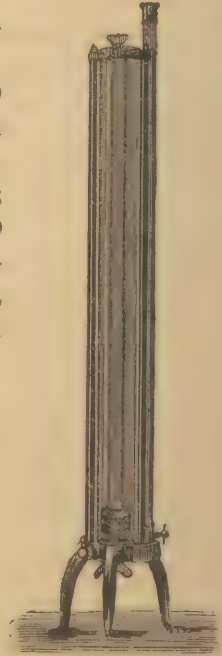
1250.—Acetometer, accompanied with hydrometer for liquids lighter than water, thermometer, and two ground stoppered



1252



1253



1248A

bottles, one containing test solution, the other solution of litmus, complete in leather case. \$4.00

1251.—Acidimeter, according to Fresenius, for testing nitric acid. .60

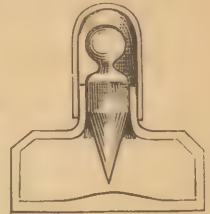
1252.—Acid Anhydrous Phosphoric. Apparatus for burning phosphorus in oxygen. \$3.50

1253.—Acid Bottle, French, having an extra tight ground stopper, extending to the bottom of the bottle, especially used for testing coins, minerals, &c.

| | | |
|---------------|-----|-----------|
| $\frac{1}{2}$ | 1 | 2 oz. |
| .25 | .30 | .35 each. |

1254.—Acid or Cobalt Bottles, of Bohemian glass, having long stoppers, covered with ground caps.

| | | | |
|---------------|-----|-----|-----------|
| $\frac{1}{2}$ | 1 | 2 | 4 oz. |
| .50 | .63 | .75 | .90 each. |



1254

1255.—Acid Brushes, of fine spun glass. Each, .50

1256.—Acid Carbonic, liquified under low temperature, in sealed glass tubes, enclosed in velvet-lined leather case. \$7.50

1257.—Acid Carbonic, apparatus, Dr. Scheibler's, for determining the quantity of carbonic acid in bone ash. \$35.00

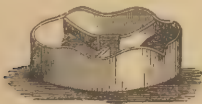
1258.—Acid Carbonic, apparatus; the same as above, American. \$25.00

1259.—Acid Carbonic. Dr. Scheibler's new apparatus for quantitative volumetric analysis of carbonic acid, \$45.00

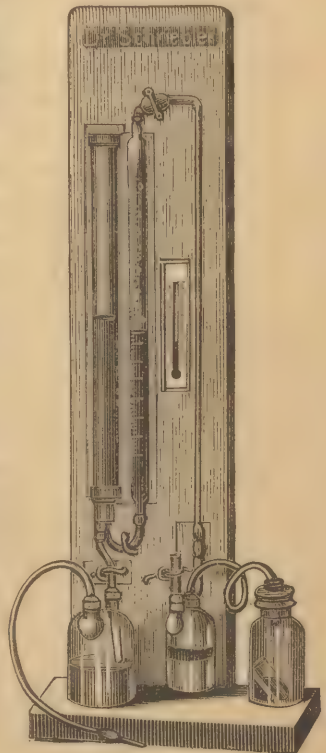
1260.—Acid Carbonic, generator, with lead tripod.

| | |
|---------------------------|--------|
| 11 inches high, | \$9.00 |
| 14 " | 12.00 |

1261.—Acid Carbonic, generator, French make, very strong and heavy, with extra tubes, cocks, &c. \$25.00



1262

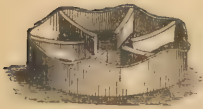


1257

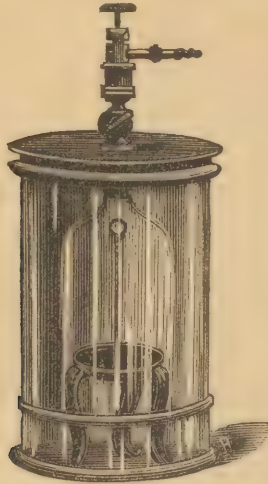
1262.—Acid Dishes, of Meissen porcelain, for freezing in vacuo, &c., with three partitions, five inches. Each, \$1.25

1263.—Acid Dishes, of Berlin porcelain, with six partitions.

| | | |
|----------------|----------------|--------------------|
| $4\frac{1}{2}$ | $5\frac{1}{2}$ | $6\frac{1}{2}$ in. |
| \$1.15 | 1.30 | 1.50 each. |



1263



1260



1264

1264.—Acid Dishes, of glass, plain, on three feet.

| | | |
|-----|----------------|--------------------|
| 3 | $3\frac{1}{2}$ | $3\frac{3}{4}$ in. |
| .50 | .60 | .75 each. |

1265.—Acid Hydrochloric apparatus, Hoffman's, for decomposition of Hydrochloric acid into hydrogen and chlorine, mounted on stand. \$6.00

1266.—Acid Hydrochloric. The same apparatus as above, but unmounted. \$2.50

1267.—Acid Hydrochloric apparatus, Hoffman's, unmounted, for showing that the gas evolved from this acid contains equal volumes of chlorine and hydrogen. \$3.00

1268.—Acid Jars, for preparing test solutions in volumetric analysis, 1000 grains. \$2.25

1269.—Acid Jars, accurately graduated, with double numbers, which can be read up or down.

| | | | | | | |
|--------|------|------|------|------|------------|---------|
| 100 | 200 | 300 | 400 | 500 | 1,000 | } c. c. |
| in. 1 | 2 | 2 | 5 | 5 | 10 | |
| \$2.00 | 2.50 | 3.00 | 3.50 | 3.75 | 4.00 each. | |



1269

1270.—Acid Jars, on brass foot, registering 0 to 12. Each, .75

1271.—Acid Measures, of porcelain, with lip.

| | | | | |
|-----|-----|-----|------|------------|
| 2 | 4 | 8 | 16 | 32 oz. |
| .30 | .50 | .90 | 1.50 | 1.80 each. |

1272.—Acid Measures, of gutta-percha, conical, capacity 1 litre. Each, \$2.00

1273.—Acid Measures, cylindrical glass.
 1 litre, \$3.00 2 litres, 3.50 each.



1274

1274.—Acid Sulphuric, apparatus for making. \$3.00

1275.—Acid Phosphorus, apparatus for making. \$2.50

1276.—Acid Pipettes, with rubber ball. .75

1277.—Acid Syphon, of glass, with suction tube.
 9 12 18 24 in.
 .35 .40 .60 .75 each.

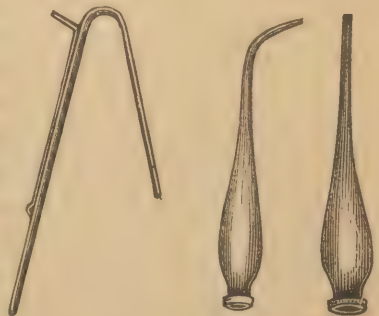
1278.—Acid Syphon, with Mohr's spring clamp, glass tip, and gutta-percha connection. Each size add .50

1279.—Acid Syphon, of glass, with suction tube and glass stop-cock, instead of Mohr's spring clamp, 18 in.

\$1.50

1280.—Acid Syphon, of glass, with delivery tube united by rubber.

\$1.50



1277

1281

1282

1281.—Adapters, French, bent, with ring around the larger end.

1 2 4 8 oz.
 .08 .10 .15 .25 each.

1282.—Adapters, French, straight, with ring around the larger end, 16 oz. capacity. Each, .50

1283.—Adapters, of Bohemian glass, bent for connecting retorts with receivers, width at larger end.

| | | | |
|----------------|----------------|----------------|-----------|
| $1\frac{1}{2}$ | $2\frac{1}{4}$ | $2\frac{1}{2}$ | 3 in. |
| .30 | .35 | .50 | .70 each. |

1284.—Adapters, straight, of Bohemian glass,

| | | | |
|----------------|----------------|----------------|-----------|
| $1\frac{1}{2}$ | $2\frac{1}{4}$ | $2\frac{1}{2}$ | 3 in. |
| .25 | .30 | .45 | .65 each. |

1285.—Adapters, of Bohemian glass, 5 feet long. Each, \$2.50

1286.—Adapters, of vulcanized rubber, 10 inches long. Each, .50

1287.—Agate Slabs, with mullers, highly polished, for grinding into fine powder materials and minerals requiring careful investigation.

| | | | | |
|----------------|----------------|----------------|----------------|------------------------|
| $5\frac{1}{4}$ | $5\frac{3}{4}$ | $5\frac{1}{2}$ | $6\frac{3}{8}$ | $6\frac{1}{4}$ in. sq. |
| \$12.00 | 15.00 | 19.00 | 22.00 | 25.00 each. |

1288.—Air Cylinders, apparatus for \$12.00

1289.—Air Globes for weighing Gases.

| | | |
|--------|------|------------|
| 1 | 2 | 3 gall. |
| \$1.25 | 2.00 | 3.00 each. |

1290.—Air Thermometer Tubes, bulb 2 in. dia. Each, .25

1291.— “ “ “ “ 3 inches. “ .50

1292.—Alcoholometry. Dr. Pyle's Book, containing tables with calculations for estimating true alcoholic per centages according to McCulloch. .75

1293.—Alcoholometers, U. S. Standard, in chamois-lined leather cases, with thermometer scale on hydrometer, and extra thermometer, comprising (with the book above referred to) the complete apparatus for dealers in proof spirits, &c., according to U. S. C. standard for exact estimates. Each, \$7.00

1294.—Alcoholometers, Tralles & Richter's, in leather cases. Each, \$3.50

1295.— “ “ “ in chamois-lined leather cases, with jar and thermometer. Each, \$6.00

1296.—Alcoholometers, Tralles's, with jar and thermometer, in chamois-lined leather cases. Each, \$5.00

1297.—Alcoholometers, U. S. Standard, with thermometer attached, and most accurate proof scales in paste-board cases. Each, \$3.00

- 1298.**—Alcoholometers, U. S. Standard, Tralles & Richter's scale, with thermometer, as above. Each, \$2.20
- 1299.**—Alcoholometers, without thermometer, in round, paste-board cases. Each, \$1.00
- 1300.**—Alcoholometers, Gay Lussac's centesimal scale, in paste-board cases. Each, \$1.50
- 1301.**—Alcoholometers, Gay Lussac and Cartier's, in tin boxes. Each, \$1.00
- 1302.**— “ graduated 15 to 95, No. 204. Each, .50
- 1303.**— “ Cartier's, French, in round cases. Each, .75
- 1304.**— “ French, in pasteboard boxes, graduated 0 to 40; very delicate and correct instruments. Each, \$1.25
- 1305.**—Alcoholometers, French, in tin boxes, graduated 10 to 40. Each, .50
- 1306.**— “ in tin cases, smaller size (No. 1,093). Each, .25
- 1307.**—Alcoholometer Jars, with glass feet, according to size. Each, .50 to .75
- 1308.**— “ “ with brass feet. Each, .90
- 1309.**—Alembics, glass, Bohemian, with loose head and tightly ground joints.

8 oz.
\$1.30

Pints.
.1.80

Quarts.
2.50 each.



1309



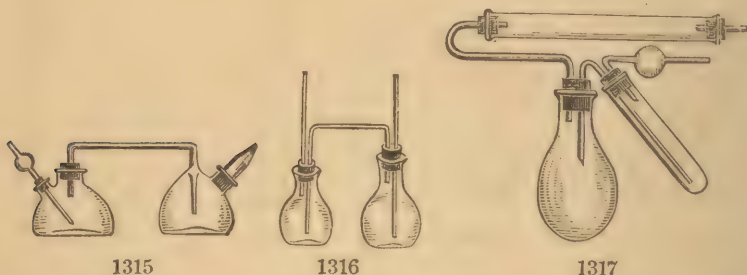
1313

- 1310.**—Alembics, glass, German, with fast heads, tubulated, quarts. Each, \$1.50
- 1311.**— “ porcelain, with loose heads, 12 oz. “ \$1.50

1312.—Alembics, Salleron's, for testing wines and saccharine alcoholic liquors, with heating apparatus. Each, 15.00

1313.—Alembic, Salleron's, for testing the quantity of alcohol in wine and spirits. Large size. \$25.00

1314.—Alembic Stoneware, for sublimations, &c., all sizes, from \$3.00 to \$7.50



1315

1316

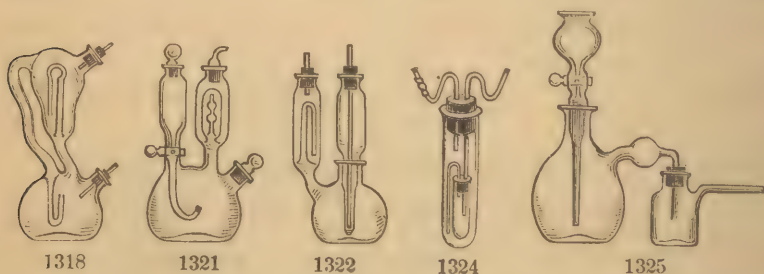
1317

1315.—Apparatus, for the determination of carbonic acid in carbonates, Wetherell's form. Each, \$1.25

1316.— " Fresenius & Wills's form (No. 450) Ea. .65

1317.— " Berzelius's " (" 498) " .75

1318.— " Rose's " (" 460) " 1.25



1318

1321

1322

1324

1325

1319.— " Mohr's form (No. 503) Ea. \$1.25

1320.— " Fresenius's " (" 451) " .75

1321.— " Schrödttter's " (" 456) " 2.00

1322.— " Geissler's " (" 455) " 1.50

1323.— " Fresenius's new form (" 452) " 1.50

1324.— " Schaffner's " (" 453) " .75

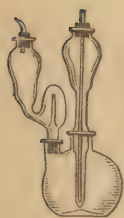
1325.— " Kipp's " (" 462) " 1.75

1326.— " Kipp's " (" 461) " 1.75

1327.— " " (" 464) " 1.65

1328.— " Mohr's " (" 467) " 1.50

- 1329.— **Apparatus**, Erdmann's new form (No. 465) Ea. \$1.50
 1329A.— " Bunsen's " 1.75



1329



1329A



1333



1334



1335

- 1330.— **Alkalimeter**, Descroizillé's, of glass, mounted on wood foot graduated from 0 to 100, in ones. \$2.00
 1331.— **Alkalimeter**, Mohr's, with glass foot, graduated, 0 to 100. \$1.75
 1332.— **Alkalimeter**, Ure's, with glass foot and stop-cock, and channel stopper for pouring liquids. \$2.00
 1333.— **Alkalimeter**, Leslie's, with glass foot, cork-stopper, and two pipette tubes. \$1.50
 1334.— Dtto, Descroizillé's, on glass foot, graduated 0 to 100. \$1.50
 1335.— " Gay Lussac, with wood foot.

| | | |
|---------------|---------------|---------------|
| 25 c. c. | 50 c. c. | 100 c. c. |
| $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ |
| \$1.75 | 2.25 | 2.50 each. |

Alkalimeters not mounted on stand. See Burettes.

- 1336.— **Ammonia**. Hoffman's apparatus for decomposing ammonia. \$6.00
 1337.— **Ammonia**. Apparatus for ascertaining the exact proportions of hydrogen and nitrogen in ammonia. Unmounted, \$3.00
 1338.— **Ammonia** carboys, for concentration of the stronger acids and ammonia, 2 necks, with delivery tube, German, glazed outside, of 200 litre capacity. \$50.00
 1339.— **Ammonia** carboys; two of the above, including connection. \$100.00



1339



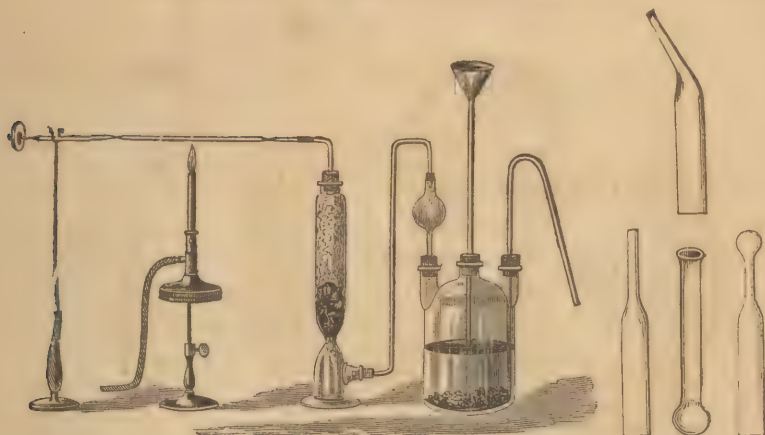
1346



1351

- 1340.—Ammonia Chloride**, apparatus for illustrating the formation of Chloride of Ammonia, by condensing the vapors of hydrochloric acid and ammonia. This consists of a gallon glass flask, to which are attached two tubes by means of an India-rubber connection. \$2.50
- 1341.—Annealing Cups**, of porcelain. .25
- 1342.—Ditto**, of porous clay. Per doz., \$2.50
- 1343.—Analysis**, apparatus for organic analysis, according to Liebig, complete. \$45.00
- 1344.—Anvils for Blowpipes**, small, with square ends. Each, .75
- 1345.—Ditto**, large. " \$1.00
- 1346.—Ditto**, round, with hammer, etc., complete. " 10.00
- 1347.—Aphlogistic or Flameless Lamp**, with platinum sponge and glass wick-holders. Each, .75
- 1348.—Aphlogistic Lamp Sponges**, with glass wick-holders. Each, .40
- 1349.—Arsenic**, Marsh's apparatus for the detection of, unmounted. Each, .50
- 1350.—Ditto**, mounted. \$4.25
- 1351.—Ditto**, brass stopcocks for the above. Each, \$1.25
- 1352.—Ditto**, Fresenius's apparatus for the detection of. 5.00
- 1353.—Ditto**, Mitscherlich's ditto. 3.00
- 1354.—Arsenic Plates**, plain.

| | | | | | |
|-----|-----|-----|-----|-----|-----------|
| No. | 000 | 00 | 0 | 1 | 2 |
| | .12 | .15 | .25 | .30 | .40 each. |



1352

1357

1355.—Arsenic Plates, Meissen, with Lips.

| | | |
|--------|---------|-----------|
| Small, | medium, | large. |
| .35 | .40 | .50 each, |

1356.—Arsenic Tubes, five different forms. Per doz., .50 to .75

1357.—Ditto, three kinds for sublimation. Per doz., .75

1358.—Aspiration Apparatus, consisting of three bottles, mounted, in box, with suction and delivery tubes for inhaling the vapor of medicinal solutions. \$2.00

1359.—Ditto, ordinary. 1.50

1360.—Aspirators, of glass, with brass stopcocks. Quarts, ca. 2.00

1361.—Ditto, ditto, ½ Galls. " 2.50

1362.—Ditto, ditto, Galls. " 3.00

1363.—Ditto, Liebig's. Each \$1.50 to 2.50

1364.—Ditto, of glass, with glass stopcocks.

| | | | | | |
|--------|--------|------|------|------|----------|
| Litres | ½ | 1 | 2 | 4 | 8 |
| | \$3.50 | 3.75 | 4.75 | 6.25 | 9.50 ea. |

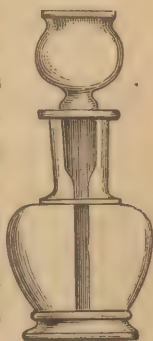
1365.—Aspirator Tubes. Each, .50

Assay Apparatus, for the various articles used in assaying, such as basins, bellows, blow-pipes, crucibles, covers, cupels, dippers, roasting dishes, flasks, hammers, ingot moulds, muffles, scoops, stopcocks, tongs, &c. See their respective alphabetical positions.

1366.—Atomizers, of glass. Each, .25

1367.—Attachments, brass, for blowpipes. " .75

1368.—Atropia Bottles. " .50

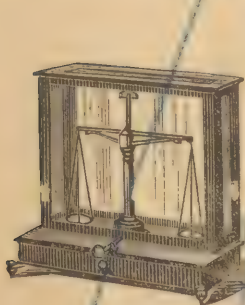


1368

BECKER & SON'S BALANCES.

1369.—No. 1. **Assay Balance** in French polished glass case, sliding frame counterpoised. Can be charged up to 25 grammes in each pan. Deviation of needle on scale 5 divisions for 1 milligramme. Steel knives with agate bearings. \$50.00

1370.—No. 2. Ditto, ditto. When loaded up to 1 gramme in each pan, needle deviates 10 divisions on the scale for 1 milligramme; $\frac{1}{10}$ part of a milligramme is therefore to be seen. Steel knives with agate bearings. \$72.00



1373



1375

1371.—No. 3. Ditto, ditto, for up to 10 grammes in each pan. \$72.00

1372.—Ditto, ditto, with apparatus for Rider. 78.00

1373.—No. 4. **Analytical Balance** for a charge up to 100 grammes in each pan, in French polished glass case, front sliding frame counterpoised. All bearings steel; sensible to $\frac{1}{4}$ milligramme with its full charge. \$85.00

1374.—No. 5. Ditto, for a charge up to 100 grammes in each pan, in fine French polished glass case, front sliding frame counterpoised. All bearings agate planes, with new improved arrangement for arrest of pans and beam; sensible to $\frac{1}{10}$ milligramme with its full charge. Pans, 2 $\frac{3}{4}$ inches diameter. Provided with apparatus for specific gravity rider and weighing tubes, being divided in $\frac{1}{2}$ parts milligrammes. \$77.00

1375.—No. 6. Ditto, for a charge up to 200 grammes in each pan,

E. B. BENJAMIN,

No. 10 BARCLAY STREET, NEW YORK,

MANUFACTURER'S AGENT FOR

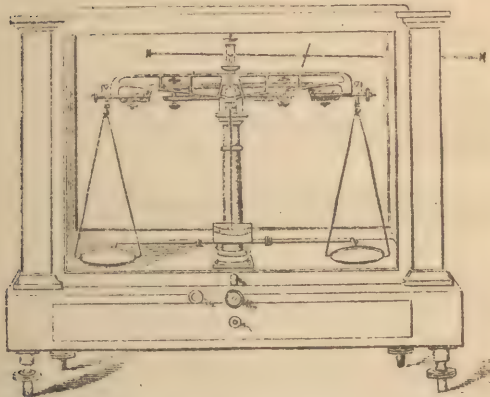
HENRY TROEMNER'S

STANDARD BALANCES AND WEIGHTS,

Established 1840, and used by all the U. S. Mints and Assay Offices, and by the Canadian Government.

BALANCES OF PRECISION.

Analytical Balances.



No. 1. Analytical Balance, capacity 200 grammes in each pan, in fine polished glass case, beam divided in 1-10 milligrammes, sensible to 1-20 milligrammes. All agate bearings, with improved arrest for pans, and apparatus for specific gravity, &c., &c.
3 in. pans. Beam 14 in.

Price, \$105.00

No. 2. Analytical Balance, in fine polished glass case, capacity 100 grammes in each pan. Beam divided in half parts of milligrammes. Sensible to 1-10 milligrammes, with apparatus for specific gravity. All bearings agate.
2 1/2 in. pans. 12 in. Beam.

Price, \$85.00

No. 3. Analytical Balance, in French polished mahogany case, with counterpoised sliding door. Capacity 2000 grains, sensible to 1-100 grain. Steel bearings, movable
3 1/2 in. pans, 10 in. beam.

Price, \$40.00

No. 4. Same Balance as No. 3, has attachment for rider, and pan arrests. Beam graduated to one milligramme.

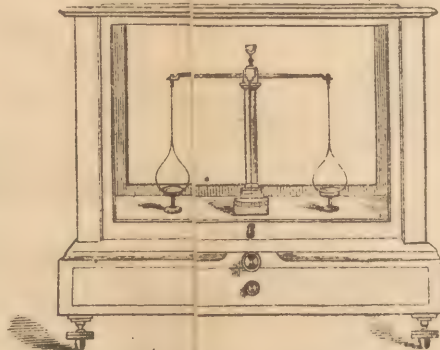
Price, \$50.00

Troemner Specific Gravity Scale.



Constructed after the plan of Dr. Mohr.
Price complete, \$20.00

Assay Balances.



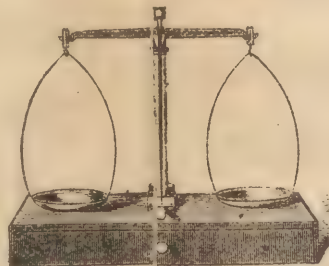
No. 1. In French polished glass case, beam resting on agate bearings. Sensible to 1-20 milligrammes.

Price, \$55.00

No. 2. In French polished glass case. Is arranged with rider apparatus and pan arrests. Open beam, divided in 1-10 milligramme; beam resting on agate planes. Needle shows ten divisions for one milligramme.

Price, \$80.00

Analytical Scales. Fig. 22.



For weighing Ores, Minerals, Gold and Silver Coin, Jewelry, Chemicals, &c., &c.

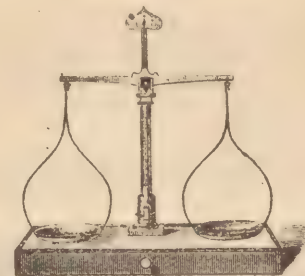
On fine Polished Mahogany Box, with drawer. Lacquered Beam, with box ends, adjusting screws, movable pans, ivory indicator. Sensible to 1-20 grain. Price does not include weights.

| No. | Length of Beam. | Diam. of Pan. | Capacity. | Price. |
|-----|-----------------|---------------|-----------|---------|
| 1, | 14 in. | 6 in. | 25 oz. | \$24.00 |
| 2, | 10 " | 4 1/2 " | 16 " | 18.00 |
| 3, | 8 1/2 " | 3 " | 8 " | 15.00 |

Pans can be suspended by chains if desired.

Chemical Scales. Fig. 23.

For General Weighing.



On polished box, with drop lever, especially constructed for laboratory use. Including weights.

| No. | Diam. of Pan. | Beam | Capacity. | Price. |
|-----|---------------|-------|-----------|---------|
| 1, | 5 in. | 9 in. | 32 oz. | \$15.00 |
| 2, | 4 " | 8 " | 16 " | 12.00 |
| 3, | 3 " | 7 " | 8 " | 10.00 |

Pans can be suspended by chains if desired.

Weights of Precision.



In fine velvet lined polished block. Weights lacquered and adjusted with the greatest care and precision.

| | | | |
|-------------------------------|---|---|---------|
| 1 Platinum Gramme to 1 Mill., | - | - | \$ 6.00 |
| 1 " " 1-10 Mill., | - | - | 7.00 |
| 10 Gramme to 1 Mill., | - | - | 7.50 |
| 10 " " 1-10 Mill., | - | - | 8.50 |
| 50 " " 1 Mill. 3 Riders, | - | - | 10.50 |
| 100 " " " " " " " " | - | - | 12.00 |
| 100 " " 1-10 Mill. 3 Riders, | - | - | 13.00 |
| 200 " " " " " " " " | - | - | 16.00 |
| Gold Assay Weights, | - | - | 7.00 |

All Riders weigh 10 Mill. unless otherwise ordered.

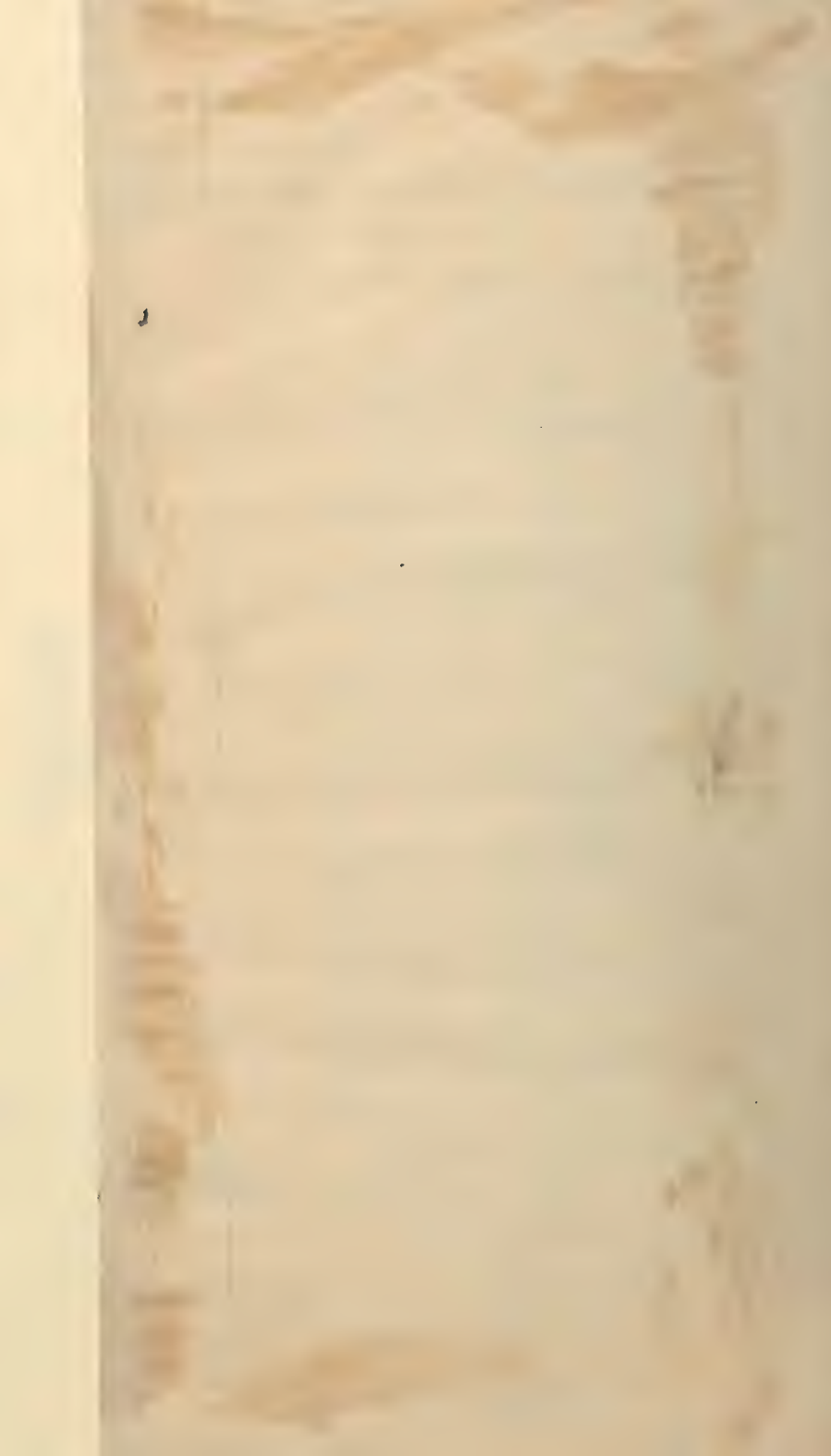
GRAINS.

| | | | |
|---|---|---|---------|
| 10 Platinum Grains to 1-10 Grain. | - | - | \$ 5.00 |
| 10 " " " " 1-100 Grain. | - | - | 6.00 |
| 10 " " " " 1-1000 Grain, | - | - | 7.00 |
| 100 Grains to 1-100 Grain, | - | - | 7.00 |
| 1000 Grains to 1-10 Grain, 3 Riders, | - | - | 10.00 |
| 1000 Grains to 1-100 Grain, 3 Riders, | - | - | 11.00 |
| 1000 Grains to 1-1000 Grain, 3 Riders, | - | - | 12.00 |
| 4 oz. Troy to 1-10 Grain, | - | - | 8.00 |
| Assay Ton Weights, 4 A. T. to 1-20 A. T., | - | - | 6.50 |

Gramme Weights.

In Mahogany Block.

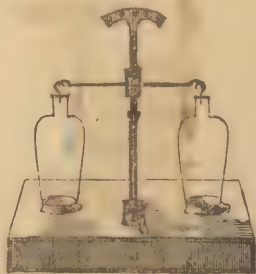
| | | | |
|----------------------------|---|---|---------|
| 500 Grammes. to 1 Gram., | - | - | \$ 8.00 |
| 500 Grammes. to 1 Centil., | - | - | 12.00 |
| 500 Grammes. to 1 Mill., | - | - | 14.00 |
| 1 Kilo. to 1 Gram., | - | - | 12.00 |
| 1 Kilo. to 1 Centil., | - | - | 16.00 |
| 1 Kilo. to 1 Mill., | - | - | 18.00 |
| 1 oz. Troy to 1-10 Grain, | - | - | 4.00 |
| 2 " " " " " " " " | - | - | 5.00 |
| 5 " " " " " " " " | - | - | 7.50 |
| 10 " " " " " " " " | - | - | 10.00 |



- in fine French polished glass case, front sliding frame counterpoised. All bearings agate planes, with new improved arrangement for arrest of pans and beam; sensible to $\frac{1}{10}$ milligramme with its full charge. Provided with arrest for pans, rider, apparatus for specific gravity and weighing tubes. Beam divided in $\frac{1}{10}$ parts of milligrammes. Pans 3 inches diameter. \$95.00
- 1376.**—No. 8. **Analytical Balance**, ditto, ditto, with adjustable shelf for supporting beaker with water when taking specific gravities. \$107.00
- 1377.**—No. 9. Ditto, for 500 grammes in each pan; sensible to $\frac{1}{10}$ part of a milligramme with its full charge. Provided with arrest for pans, rider, apparatus for specific gravity and weighing tubes. Pans 4 inches diameter. \$120.00
- 1378.**—No. 10. Ditto, ditto, with adjustable shelf for supporting beaker with water when taking specific gravities. \$132.00
- 1379.**—No. 11. **Balance** for scientific use, for a charge up to 1000 grammes in each pan; sensible to $\frac{1}{10}$ milligramme with its full charge. Glass case as those before. All bearings agate planes. Provided with arrest for pans, rider, adjustable shelf for specific gravity, etc. Pans 5 inches diameter. \$175.00
- 1380.**—No. 12. Ditto, in glass case, for a charge up to 10 kilos in each pan; sensible to 1 milligramme with that charge. Pans 9 inches diameter. \$375.00

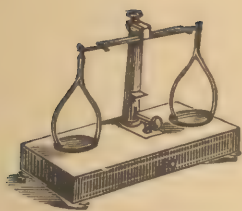
BECKER'S PRESCRIPTION BALANCES.

- 1381.**—No. 1. **Prescription Scale**, on French polished box, with drawer, drop lever, bows and movable pans. Can be charged up to 2 ounces in each pan; sensible to $\frac{1}{16}$ grain. \$10.00
- 1382.**—Ditto, in French polished glass case, with counterpoised front sliding frame. \$20.00
- 1383.**—No. 2. **Balance** for 5 ounces in each pan, on French polished box with drawer, provided with drop lever, bows and movable pans; sensible to $\frac{1}{16}$ grain. \$13.50
- 1384.**—No. 3. Ditto, for 10 ounces in each pan, on French polished box with drawer, provided with



1381

- drop lever, bows, movable pans, set screws and level; sensible to $\frac{1}{16}$ grain. \$20.00
- 1385.**—**Balance** for 10 ounces in each pan, in glass case, with sliding frame; sensible to $\frac{1}{16}$ grain. \$28.00
- 1386.**—No. 4. Ditto, for 20 ounces in each pan, on French polished box with drawer, provided with eccentric for lifting, bows, movable pans, set screws and level; sensible to $\frac{1}{16}$ grain. \$25.00
- 1387.**—Ditto, ditto, in glass case, with counterpoised sliding frame; sensible to $\frac{1}{16}$ grain with that charge. \$38.00
- 1388.**—No. 5. Ditto, ditto, for 50 ounces in each pan; sensible to $\frac{1}{2}$ grain with that charge. \$32.00
- 1389.**—Same, in glass case; sensible to $\frac{1}{4}$ grain. \$50.00
- 1390.**—No. 6. Ditto, ditto, for 100 ounces in each pan; sensible to $\frac{1}{2}$ grain with that charge. \$45.00.
- 1391.**—Same, in glass case; sensible to $\frac{1}{4}$ grain. 70.00
- 1392.**—No. 7. Ditto, ditto, for 300 ounces in each pan; sensible to 1 grain with that charge. \$60.00
- 1393.**—No. 8. **Bullion and Specie Scale**, carrying 500 ounces in each pan; sensible to 1 grain with that charge. All bearings plane, with new improved construction for the arrestation of the beam. Provided with arrest for pans, set screws and level. \$150.00
- 1394.** Ditto, ditto, in glass case; sensible to $\frac{1}{2}$ grain. 200.00
- 1395.**—No. 9. Ditto, ditto, for 2000 ounces in each pan; sensible to 2 grains with that charge. \$185.00
- 1396.**—Same, in glass case; sensible to 1 grain. 275.00
- 1397.**—No. 10. Ditto, ditto, for 3500 ounces in each pan; sensible to 2 grains with that charge. \$500.00
- 1398.**—Same, in mahogany glass case, French polished, with counterpoised front sliding frame; sensible to 1 grain with that charge. \$650.00
- 1399.**—**Balances** for Druggists and Assayers, "weighing in," on marble slab, carefully adjusted. Each, \$15.00
- 1400.**—Ditto, ditto, wooden foot and drawer for tools and weights. Each, \$10.00
- 1401.**—Ditto, of horn, with beam.
- | | | | |
|-------------|--------|----------------|------------|
| Pans.—Size, | 3 | $3\frac{1}{2}$ | 4 in. |
| Price, | \$1.50 | 2.00 | 3.00 each. |
- 1402.**—Ditto, of brass, small. Each, \$5.00



1400



1401



1405



1411

1403.—**Balloons, of Collodion**, extremely light and thin, for ascension, with hydrogen gas.

| | | |
|--------|-----|--------------|
| Size, | 10 | 12 in. |
| Price, | .75 | \$1.00 each. |

1404.—**Balloons, French Rubber.** Each, .75

1405.—**Ditto, Goldbeater Skin**, from \$1.50 to \$5.

(These balloons, when not in use, should be kept in a close package, with a little camphor, to preserve them from insects. They should never be wetted.)

Balloons, of Glass. See Air Globes.

1406.—**Barometer**, for use in schools, usual form, from \$3 to \$15.

1407.—**Barometer, Bunsen's Syphon**, graduated on both branches in millimeters, filled. \$12.00

1408.—**Barometers, Aneroid**, accurately adjusted; same as used in the University of Vienna. Each, \$30.00

1409.—**Ditto, with Storm Glass.** The rising of the milky substance indicates approach of storm. Each, \$3.00

1410.—**Barometer Tubes**, 3 feet in length, sealed at one end. .50

1411.—**Ditto, with bulb**, for use with mercury. Each, .75

1412.—**Ditto, including the mercury.** " \$1.25

1413.—**Barometer Bulb Tubes.** " .50

Basins and Dishes. See Crystallizing and Evaporating Apparatus.

1414.—**Basket of Lead**, for holding pieces of zinc in hydrogen generators. Each, .50

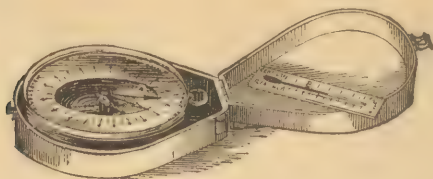
Batteries. See Electrical Apparatus. Baths, Eye, see E.

1415.—**Beakers**, of the *very best* Bohemian glass, thoroughly annealed, and of uniform thickness, for enduring extremes of



1407

temperature, of Berzelius's usual form, in nests of 00 to 1, containing $1\frac{1}{2}$ to 3 ounces. Per nest, .20



1408

PER NEST.

| | | | | |
|------------------------|----------------|--------------|------------------------------------|--------|
| 1416. —Beakers, | in nests of 4. | —00 to 2, | containing $\frac{1}{2}$ to 4 ozs. | .35 |
| 1417. —Ditto, | ditto, | 3,—1 to 3, | “ 3 to 6 “ | .40 |
| 1418. —Ditto, | ditto, | 5,—0 to 4, | “ $1\frac{1}{2}$ to 9 “ | .65 |
| 1419. —Ditto, | ditto, | 5,—1 to 5, | “ 3 to 15 “ | .75 |
| 1420. —Ditto, | ditto, | 6,—0 to 5, | “ $1\frac{1}{2}$ to 15 “ | .80 |
| 1421. —Ditto, | ditto, | 7,—0 to 6, | “ $1\frac{1}{2}$ to 21 “ | \$1.10 |
| 1422. —Ditto, | ditto, | 9,—0 to 8, | “ $1\frac{1}{2}$ to 48 “ | 2.00 |
| 1423. —Ditto, | ditto, | 10,—0 to 9, | “ $1\frac{1}{2}$ to 70 “ | 2.25 |
| 1424. —Ditto, | ditto, | 13,—0 to 12, | “ $1\frac{1}{2}$ to 140 “ | 4.00 |

(The capacities are approximate only.)

1425.—Ditto, ditto, (singly). The capacities below, and dimensions, are approximate :

| NOS. | HEIGHT. | WIDTH. | CONTENTS. | PRICE, EACH. |
|------|--------------------|----------------------|----------------------|--------------|
| 0 | 2 inch. | $1\frac{1}{4}$ inch. | $1\frac{1}{2}$ ounce | .06 |
| 1 | $2\frac{1}{2}$ do. | $1\frac{1}{2}$ do. | 3 do. | .09 |
| 2 | 3 do. | $1\frac{3}{4}$ do. | 4 do. | .12 |
| 3 | $3\frac{3}{4}$ do. | 2 do. | 6 do. | .16 |
| 4 | 4 do. | $2\frac{1}{4}$ do. | 9 do. | .20 |
| 5 | $4\frac{1}{2}$ do. | $2\frac{3}{8}$ do. | 15 do. | .25 |
| 6 | $5\frac{3}{8}$ do. | 3 do. | 21 do. | .35 |
| 7 | $6\frac{3}{8}$ do. | $3\frac{1}{4}$ do. | 33 do. | .40 |
| 8 | $7\frac{1}{2}$ do. | $3\frac{3}{4}$ do. | 48 do. | .45 |
| 9 | $8\frac{1}{4}$ do. | 4 do. | 70 do. | .55 |
| 10 | $9\frac{1}{4}$ do. | $4\frac{1}{2}$ do. | 85 do. | .65 |
| 11 | 10 do. | 5 do. | 110 do. | .75 |
| 12 | 11 do. | $5\frac{1}{2}$ do. | 140 do. | .90 |

1426.—Beakers, tall and narrow; French form, very thin, 8 in a nest. Nos. 1 to 8. Price per nest, \$3.50



1419

1422

1424

1426

1435

| NOS. | HEIGHT. | WIDTH. | CONTENTS. | PRICE, EACH. |
|------|-----------------------|-----------------------|---------------------------|--------------|
| 1 | 2 $\frac{3}{8}$ inch. | 1 $\frac{1}{2}$ inch. | 1 $\frac{1}{2}$ ounce. | .25 |
| 2 | 3 do. | 2 do. | 2 do. | .30 |
| 3 | 4 $\frac{3}{8}$ do. | 2 $\frac{1}{2}$ do. | 4 do. | .40 |
| 4 | 5 do. | 2 $\frac{5}{8}$ do. | 6 do. | .50 |
| 5 | 6 $\frac{1}{2}$ do. | 3 do. | 16 do. | .60 |
| 6 | 8 do. | 3 $\frac{1}{2}$ do. | 24 do. | .70 |
| 7 | 9 $\frac{1}{2}$ do. | 4 do. | 32 do. | .80 |
| 8 | 10 do. | 4 $\frac{1}{2}$ do. | $\frac{1}{2}$ gal. 48 oz. | \$1.00 |

1427.—Beakers, best Bohemian Glass, Berzelius's form, extra wide nests, from Nos. 1 to 6, same size as Griffin's lipped, full nests.

Each, \$1.75

1428.—Ditto, very large, Nos. 10 to 13, nests of 4. " 3.50

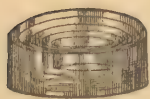
1429.—Ditto, full nests of 15,—00 to 13. " 7.00

1430.—Ditto, singly. Each, .15 to 2.00

1431.—Ditto, Griffin's wide form, lipped.

| NOS. | DEPTH. | WIDTH. | CAPACITIES. | PRICE, EACH. |
|------|---------------------|-----------------------|-------------|--------------|
| 1 | 3 inch. | 2 $\frac{1}{4}$ inch. | 5 ounce. | .15 |
| 2 | 3 $\frac{1}{2}$ do. | 2 $\frac{1}{2}$ do. | 8 do. | .25 |
| 3 | 4 do. | 3 do. | 12 do. | .30 |
| 4 | 4 $\frac{1}{2}$ do. | 3 $\frac{1}{2}$ do. | 20 do. | .35 |
| 5 | 5 do. | 3 $\frac{3}{4}$ do. | 25 do. | .40 |
| 6 | 5 $\frac{1}{2}$ do. | 4 $\frac{1}{2}$ do. | 40 do. | .55 |
| 7 | 6 $\frac{1}{2}$ do. | 4 $\frac{3}{4}$ do. | do. | .60 |
| 8 | 7 $\frac{1}{4}$ do. | 5 do. | do. | .70 |
| 9 | 8 $\frac{1}{2}$ do. | 5 $\frac{3}{4}$ do. | do. | .80 |
| 10 | 9 $\frac{1}{2}$ do. | 6 $\frac{1}{4}$ do. | do. | .90 |
| 11 | 9 $\frac{3}{4}$ do. | 6 $\frac{3}{4}$ do. | do. | \$1.00 |
| 12 | 10 do. | 7 do. | do. | 1.10 |

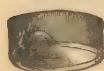
1432.—Beakers, ditto, ditto, nests of 3,—1 to 3. Each, .60



1437



1438



1441



1442



1443

1433.—Beakers, Griffin's wide form, lipped, nests, 4,—1 to 4, ea. .95

1434.—Ditto, 5,—1 to 5. Each, \$1.35

1435.—Ditto, 6,—1 to 6. " 2.00

1436.—Ditto, glass, flat bottom, perpendicular sides, without rim, shallow (from 2 to 2½ inches deep), nests of 4, small.

Each, .75

1437.—Ditto, nests of 9. " \$2.00

1438.—Ditto, tall conical, with lip, 8 ounce capacity. " .50

1439.—Ditto, porcelain, egg shape, flaring mouth, useful in dissolving metals and acids. Each, .30

1440.—Beale's Quick Filter. .75

1441.—Beehive, shelves. Small, 25c.; large, 75c.

1442.—Bell Glasses, flat knobbed.

| | |
|---------|--------------------|
| 6 inch. | 8 inches diameter. |
| \$1.25 | 1.75 each. |

1443.—Ditto, swelled, with knob.

| | | |
|--------|------|------------|
| ½ | 1 | 2 gal. |
| \$1.50 | 2.00 | 3.00 each. |

1444.—Ditto, open tops.

| | | |
|--------|------|------------|
| ½ | 1 | 2 gal. |
| \$1.75 | 2.50 | 3.50 each. |

1445.—Ditto, French, knobbed, tall.

| | | | |
|--------|---------|--------|------------|
| pints. | quarts. | ½ | 1 gal. |
| .30 | .60 | \$1.00 | 1.50 each. |

1446.—Ditto, American, tall.

| | | | | | |
|--------|---------|--------|------|------|------------|
| pints. | quarts. | ½ | 1 | 3 | 5 gal. |
| .40 | .75 | \$1.00 | 1.50 | 3.75 | 7.50 each. |

1447.—Ditto, French, tall, with foot, made to be reversed, for use with light and heavy gases or fluids, vase form.

| | | |
|--------|------|------------|
| ½ | 1 | 2 gal. |
| \$1.50 | 1.75 | 2.75 each. |

1448.—Ditto, American, with small foot.

| | | | |
|--------|------|------|-----------|
| ½ | 1 | 1½ | 2 gal. |
| \$1.25 | 1.50 | 1.75 | 2.50 each |



1444

1445

1449

1451

1452

1453

1456

1449.—Bell Glasses, tall, wide open top.

| | | | |
|--------|---------|---------------|------------|
| pints. | quarts. | $\frac{1}{2}$ | 1 gal. |
| .50 | .75 | \$1.00 | 1.50 each. |

1450.—Ditto, with glass plate on top, extra.

Each, .25

1451.—Ditto, open mouth, for caps.

| | | |
|---------|---------------|------------|
| quarts. | $\frac{1}{2}$ | 1 gal. |
| .75 | \$1.00 | 1.50 each. |

1452.—Ditto, with brass cap and stopcock.

| | | |
|---------|---------------|------------|
| quarts. | $\frac{1}{2}$ | 1 gal. |
| \$2.25 | 2.75 | 3.25 each. |

1453.—Ditto, accurately stoppered with fine ground emery.

| | | |
|--------|---------------|------------|
| quarts | $\frac{1}{2}$ | 1 gal. |
| \$1.00 | 1.50 | 1.75 each. |

1454.—Ditto, 16 oz., with hole in stopper, large enough to introduce a tube. .75

1455.—Ditto, for hydrogen lamps, 8 oz.

“ .35

1456.—Ditto, open mouth, with tubulature at bottom, for use with Bunsen's pump.

| | |
|--------|---------------|
| pints. | quarts. |
| \$1.75 | \$2.25. each. |

1457.—Ditto, with heavy emery ground mirror glass plate for the bottom.

| | |
|--------|------------|
| pints. | quarts. |
| \$2.75 | 3.25 each. |

1458.—Ditto, Bohemian, having the base stoppered with large ground glass stopper, cut and polished on the bottom.

| | | | |
|-----|-----|-----|--------------|
| 4 | 8 | 16 | 32 oz. |
| .30 | .50 | .75 | \$1.00 each. |

1459.—Ditto, open top, graduated in cubic centimetres.

| | | | |
|--------|-------|-------|------------|
| 500 | 1,000 | 2,000 | 2,500 cc. |
| \$2.50 | 3.50 | 5.25 | 5.50 each. |



1460.—Bell Glasses, with cap and brass cock fitted.

| | | | |
|--------|-------|-------|------------|
| 500 | 1,000 | 2,000 | 2,500 cc. |
| \$4.00 | 5.00 | 6.75 | 7.25 each. |

1461.—Ditto, fitted with glass globes, with brass cap, stopcocks, etc., 1 gal. Each, \$6.00

Bell-Shaped Gasometers. See Gasometers.

1462.—Bellows, hand.

| | |
|-----|--------------|
| 6 | 8 inch. |
| .75 | \$1.00 each. |

1463.—Ditto, double action blast, for use with the foot.

| | |
|----------------------|------------|
| single air receiver. | double. |
| \$4.00 | 6.00 each. |

1464.—Binding Screws, for connecting poles of Batteries, fancy styles. Each, .50

1465.—Ditto, for connecting poles of batteries, plain. " .25

1466.—Binding Clamps, for Smee's batteries. " .75

1467.—Ditto, for Bunsen's smaller battery. Per sett, .75

1468.—Ditto, for Bunsen's larger battery. " \$1.25

1469.—Bladders, hogs'. Each, .10

1470.—Ditto, with brass neck. " .60

1471.—Ditto, with stopcock and plain bubble pipe. " \$2.50

1472.—Ditto, for exploding gases. " 1.00

1473.—Bladder Pieces. " .50

Blast Lamps. See Burners.

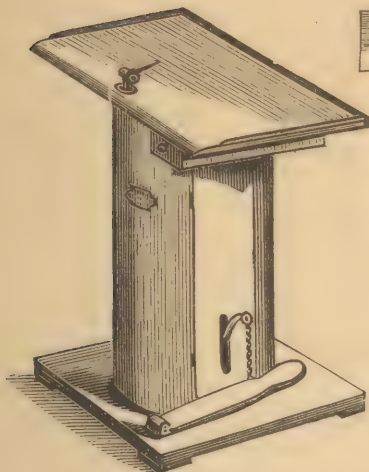
1474.—Blast Attachment, for blowpipe, brass. " .75

1475.—Blood, Circulating Apparatus, to illustrate the mode of circulation of the blood through the veins.

| | |
|---------------|----------------|
| Small, \$4.00 | Large, \$10.00 |
|---------------|----------------|

1476.—Blowpipe Tables, best French make, with iron top, and drawer for tools, having brass discharge pipe with two nozzles. Each, \$40.00

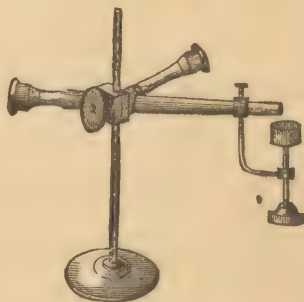
1477.—Blowpipes, ox-hydric, small size. " 5.00



1476

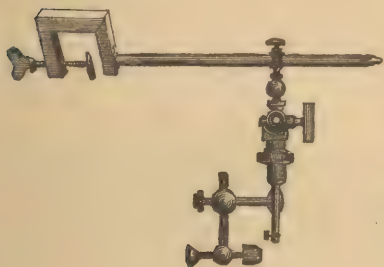


1475

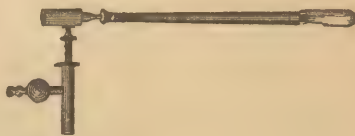


1478

- 1478.—Blowpipes, compound, mounted on stand. Each, \$7.50
 1479.—Blowpipe, ox-hydric, compound, on stand, with double stopcock. \$10.00
 1480.—Ditto, ox-hydric, unmounted, very powerful. 15.00
 1481.—Ditto, for oxhydric or calcium light, carefully finished, with regulating screws. 20.00



1481

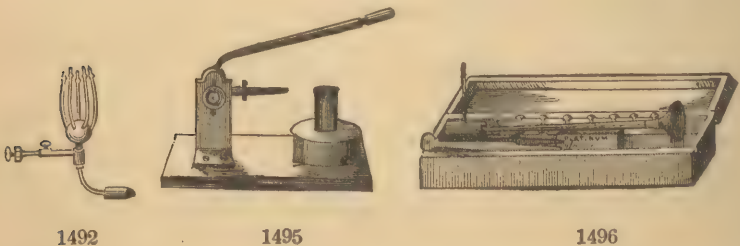


1491

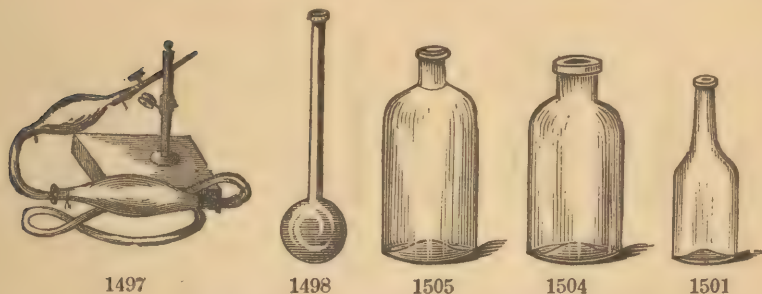
- 1482.—Blow-pipe, of glass. .25
 1483.—Ditto, Black's, conical, of japanned tin, with movable brass nozzle. .40
 1484.—Ditto, brass, jewelers' form, 8 inch. Each, .25
 1485.—Ditto, ditto, with brass bulb. " .75
 1486.—Ditto, brass, Berzelius's form, short nozzle piece, and soldered platinum tips, in paper cases. Each, \$2.00



- 1487.—**Blow Pipes**, brass, with barrel-shaped head, soldered platinum tip. Each, \$2.50
- 1488.—Ditto, Plattner's form, brass, extra fine, with two tips, and extra heavy soldered platinum ends, including mouth-piece having combined effect of trumpet and cylinder. Each, \$3.00
- 1489.—Ditto, ditto, German silver. " 3.50
- 1490.—Ditto, ditto, ditto, nickelized. " 4.00
- (The last mentioned will not become easily oxidized.)
- 1491.—Ditto, brass, with blast attachment for gas, and regulating screw with mark. Each, \$3.00



- 1492.—Ditto, Plattner's spinne, of brass, having five jets from one reservoir, to be used in connection with Rose's Lamp and Blow Table, to produce a high heat for fusing minerals, etc. Each \$5.00
- 1493.—Ditto, Bunsen's, blast, mounted on round iron foot, having a rubber attachment, connecting with a horn-mouth piece. Each \$5.00



- 1494.—**Blow-pipe Brass**, with ivory-mouth piece, mounted on fine mahogany stand, having jet arranged with thumb-screw, so that it may be turned in either vertical or horizontal directions. Each \$3.50
- 1495.—Ditto, ditto, with brass lamp. “ 4.50
- 1496.—Ditto, in fine mahogany case, containing one Berzelius blow-pipe, with soldered platinum end, ten reagent cells with caps, pair of forceps and box for platinum. Each \$5.00
- 1497.—**Blow-pipe**, mounted on stand, with automatic bellows. Each \$12.00

Blow-pipe Apparatus. See Apparatus.

1498.—**Bolt Heads**, of Bohemian glass.

| | | |
|-----|-----|-----------|
| 4 | 8 | 16 oz. |
| .35 | .40 | .50 each. |

1499.—**Bolt Heads**, with long neck of ordinary glass. Each, .60 to \$1.00

Bone Ash. See Chemicals.

1500.—**Bottles** for Chameleon. Each \$5.00

1501.—**Bottles**, for Gas, Bohemian and French.

| | | |
|------------|--------------|-------------------|
| 8 oz., .35 | 16 oz., .45. | 22 oz., .65 each. |
|------------|--------------|-------------------|

1502.—Ditto, French narrow-mouthed, or Packing bottles, for corks, pressed, per doz.

| | | | | | | |
|---------------|---------------|---------------|-----|-----|-----|-------|
| $\frac{1}{8}$ | $\frac{1}{4}$ | $\frac{1}{2}$ | 1 | 2 | 4 | 6 oz. |
| .20 | .25 | .30 | .35 | .40 | .50 | .65 |



1502

1503.—Ditto, ditto, ditto, oval, 2 oz., per doz. .60

1504.—Ditto, best quality white imported blown glass, with ring around the neck and wide mouths:

| | | | | | | | | |
|---------------|---------------|-----|--------|------|------|------|------|---------------|
| $\frac{1}{4}$ | $\frac{1}{2}$ | 1 | 2 | 4. | 6 | 8 | 16 | 32 oz. |
| .40 | .50 | .75 | \$1.00 | 1.25 | 1.50 | 1.75 | 2.50 | 4.00 per doz. |

1505.—Ditto, ditto, narrow mouthed, same as above.



1506.—Bottles, American pressed, furnished only on special application. Price much below the above.

1507.—Ditto, French colored glass, narrow mouth.

1 oz., .50 2 oz., .60 4 oz., .75 6 oz., \$1.25 12 oz., 1.75

1508.—Ditto, ditto, ditto, wide-mouthed, same prices.

1509.—Ditto, German, wide and vial mouth.

| | | | | | |
|---------------|-----|-----|-----|-----|-----------------|
| $\frac{1}{2}$ | 1 | 2 | 4 | 8 | 16 oz. |
| .40 | .45 | .50 | .65 | .75 | \$1.50 per doz. |

1510.—Ditto, French sample, tall and taper for corks, each .40 to .50

1511.—Ditto, sample, for syrups, on glass foot. Each .25

1512.—Ditto, sample, French, narrow shape and long, of white glass. Per doz. \$1.25

1513.—Ditto, salt-mouths, American, or wide-mouthed bottles for storing salts, ground glass stoppers, with mushroom tops.

| | | | |
|--------|---------|---------------|----------------|
| pints. | quarts. | $\frac{1}{2}$ | 1 gal. |
| \$2.70 | 4.00 | 5.25 | 12.00 per doz. |

1514.—Ditto, German, ditto, ditto, ditto.

| | | | | | | | | | |
|--------|------|------|------|------|------|------|------|--------|--------------------|
| 1 | 2 | 4 | 6 | 8 | 12 | 16 | 24 | 32 oz. | $\frac{1}{2}$ gal. |
| \$1.25 | 1.50 | 1.75 | 2.00 | 2.25 | 2.75 | 3.25 | 4.00 | 5.00 | 8.00 doz. |

1515.—Ditto, ditto, Bohemian, with finely-cut and polished tops, made of glass free of lead, and not easily affected by chemicals.

| | | | | | | | |
|--------|------|------|------|------|------|------|---------------|
| 1 | 2 | 3 | 4 | 6 | 8 | 16 | 32 oz. |
| \$2.00 | 2.25 | 2.50 | 2.85 | 3.50 | 4.00 | 5.50 | 7.00 per doz. |

1516.—Ditto, salt-mouths, French, with hand made stoppers accurately double-ground with the finest emery, so that reagents stored in them, will not deteriorate.

| | | | | | | | | | | |
|---------------|---------------|---------------|---------------|------|------|------|------|------|------|---------------|
| $\frac{1}{8}$ | $\frac{1}{4}$ | $\frac{1}{2}$ | $\frac{3}{4}$ | 1 | 2 | 4 | 8 | 12 | 16 | 32 oz. |
| \$1.15 | 1.20 | 1.25 | 1.30 | 1.50 | 2.25 | 3.00 | 4.00 | 5.00 | 5.50 | 7.00 per doz. |

1517.—Ditto, French, colored.

| | | | | | |
|--------|------|------|------|------|----------------|
| 1 | 2 | 4 | 8 | 1 | 32 oz. |
| \$2.00 | 2.50 | 3.00 | 6.00 | 8.00 | 10.00 per doz. |

1518.—Bottles, ditto, Bohemian black, cut and polished mushroom tops, for storing chemicals which are required to be kept from the light. Per doz. \$6.50

1519.—Ditto, American tincture, or narrow-mouth, with ground glass stoppers and mushroom tops

| | | | | | | |
|--------|------|------|--------|--------------------|--------|----------------|
| 4 | 8 | 16 | 32 oz. | $\frac{1}{2}$ gal. | 1 gal. | 2 gal. |
| \$2.00 | 2.25 | 2.63 | 3.00 | 5.25 | 8.00 | 24.00 per doz. |

1520.—Ditto, ditto, square-pressed stoppers.

| | | |
|--------|------|---------------|
| 8 | 16 | 32 oz. |
| \$2.25 | 2.63 | 3.00 per doz. |

1521.—Ditto, ditto, German flat top stoppers.

| | | | | | | | | | |
|---------------|------|------|------|------|------|------|------|------|---------------|
| $\frac{1}{2}$ | 1 | 2 | 3 | 4 | 6 | 8 | 12 | 16 | 32 oz |
| \$1.00 | 1.25 | 1.50 | 1.75 | 2.00 | 2.25 | 2.75 | 3.50 | 3.80 | 4.50 per doz. |

1522.—Ditto, ditto, Bohemian glass, entirely free from lead, flat top stoppers, fine cut and polished tops.

| | | | | | |
|--------|------|------|------|------|---------------|
| 1 | 2 | 4 | 8 | 16 | 32 oz. |
| \$2.00 | 2.25 | 2.75 | 4.00 | 5.50 | 7.00 per doz. |

1523.—Ditto, Tincture, German, hand-made top stoppers, accurately ground with fine emery, similar to No. 1524.

| | | | | | | | | | | |
|---------------|---------------|---------------|-----|------|------|------|------|------|------|---------------|
| $\frac{1}{8}$ | $\frac{1}{4}$ | $\frac{1}{2}$ | 1 | 2 | 4 | 6 | 8 | 12 | 16 | 32 |
| .55 | .65 | .75 | .90 | 1.00 | 1.25 | 1.50 | 1.75 | 2.25 | 2.50 | 4.50 per doz. |

1524.—Ditto, ditto, French, each stopper accurately hand-made and double-ground with finest emery, so that no air can enter to injure the solutions stored in them; these bottles are made expressly for the laboratory, to hold choice reagents.



1516

1524

| | | | | | | | | | | |
|---------------|---------------|---------------|------|------|------|------|------|------|------|---------------|
| $\frac{1}{8}$ | $\frac{1}{4}$ | $\frac{1}{2}$ | 1 | 2 | 4 | 6 | 8 | 12 | 16 | 32 oz. |
| .90 | \$1.00 | 1.10 | 1.15 | 1.25 | 1.75 | 2.25 | 2.50 | 3.00 | 3.25 | 5.00 per doz. |

1525.—Ditto, Tincture, French vitrified labels for Acids, Ammonia, Alcohol, etc., carefully stopped by hand, shape No. 1524.

| | | | |
|---------------------|--------|--------|--------------------|
| $\frac{1}{2}$ pint. | pint. | quart. | $\frac{1}{2}$ gal. |
| .75 | \$1.00 | 1.25 | 2.50 each. |

Ditto, ditto, with engraved labels to order.

1526.—Ditto, ditto, French blue tinctures, or narrow mouth, with glass stoppers.

| | | | | | | |
|--------|------|------|------|------|------|---------------|
| 1 oz. | 2 | 3 | 4 | 8 | 16 | qt. |
| \$1.25 | 1.30 | 1.50 | 1.75 | 3.00 | 4.50 | 6.00 per doz. |

1527.—Ditto, ditto, Bohemian, flat cut and polished tops.

| | |
|---------------|------------------------|
| 4 oz., \$3.00 | 8 oz., \$4.25 per doz. |
|---------------|------------------------|



- 1528.**—Bottles, tubulated at foot and narrow mouth for corks.
 Qts., .75 $\frac{1}{2}$ gal., \$1.00 1 gal., 1.25 each.
- 1529.**—Ditto, Tincture, accurately ground top stopper, tubulated at foot for separations.
 1 litre. 2 litres. 4 litres.
 \$1.00 1.50 2.00 each.
- 1530.**—Ditto, separatory, with accurately ground top stoppers, and stop-cocks carefully ground into the tubulature at foot, every joint nicely polished with ground emery, so that neither air nor fluids can escape when enclosed. Best French.
 $\frac{1}{2}$ 1 2 4 8 litres.
 \$3.50 3.75 4.75 6.25 9.50 each.
- 1531.**—Ditto, separatory, consisting of separatory bottles and separatory funnel, joined by a rubber stopper.
 1 litre, \$6.00 2 litres, 8.00 each.
- 1532.**—Ditto, chlorine, of colored glass, carefully ground glass stopper, with glass cap fitted by ground glass joint, 1 litre capacity. Each, \$2.00
- 1533.**—Ditto, for ether, white glass, with cap and ground stoppers
 1 2 4 8 16 32 oz. capacity.
 .25 .35 .40 .60 \$1.00 1.30 each.
- 1534.**—Ditto, Woulff's small 2 neck, for weighing and fitting small apparatus. Per doz., \$6.00
- 1535.**—Ditto, ditto, 3 necks. " 7.20



1534



1539



1541



1542



1543

1536.—Bottles, 2 necks, with round straight neck for rubber tubing, 12 oz. Each, \$1.00

1537.—Ditto, ditto, with centre neck for cork, 12 oz “ 1.25

1538.—Ditto, Woufff's, Bohemian, 2 necks.

| | | | | | | |
|-----|-----|-----|-----|-----|-----|--------------|
| 2 | 4 | 8 | 16 | 32 | oz. | ½ gal. |
| .40 | .45 | .50 | .65 | .90 | | \$1.30 each. |

1539.—Ditto, ditto, with a tubulature, near bottom.

Quarts, \$1.50 ½ gal., 2.25 each.

1540.—Ditto, Woufff's Bohemian, 3 necks:

| | | | | | | | | | |
|-----|-----|-----|-----|--------|-----|------|------|------|-------|
| 2 | 4 | 8 | 16 | 32 | oz. | ½ | 1 | 1½ | gal |
| .45 | .45 | .60 | .75 | \$1.00 | | 1.25 | 2.50 | 3.25 | each. |

1541.—Ditto, Woufff's French, 2 necks carefully sealed on with glass shoulders. These French Woufff bottles are never known to leak about the tubulature.

| | | | | | |
|-----|-----|--------|------|------|---------|
| ¼ | ½ | 1 | 2 | 4 | litres. |
| .56 | .75 | \$1.00 | 1.40 | 2.50 | each |

1542.—Bottles, Woufff's French, 3 necks.

| | | | | | |
|-----|-----|------|------|------|---------|
| ¼ | ½ | 1 | 2 | 4 | litres. |
| .65 | .85 | 1.15 | 1.75 | 3.00 | each. |

1543.—Ditto, Woufff's French, 2 necks, with tubulature near foot.
1 litre, \$1.75 2 litres, \$2.50 4 litres, \$4.00 each.

1544.—Ditto, ditto, 2 necks, stoneware, tubulature near bottom.
60 litres. * Each, \$60.00

1545.—Bottle Caps, of flexible vulcanized caoutchouc. Price according to diameter. \$2.50 to 4.50 per doz.



1545

1546.—Bottle Imps, ordinary. Each, .25

1547.—Ditto, fine quality.

Each, .75

1548.—Ditto, with car and balloon.



“ \$1.00

1549.—Bottle Brushes. See Brushes.

1550.—Boxes of black japanned tin for blow-pipe use in holding capsules, test tubes, etc. Each, .75



1547

- 1551.—Boxes, turned ivory, for $\frac{1}{2}$ oz. bottles. Per doz., .60
 1552.—Ditto, including bottles. “ \$2.00
 1553.—Ditto, boxwood, including bottles. “ 1.50
 1554.—Ditto, of pasteboard, including bottles. “ 1.25
 1555.—Ditto, fine turned rosewood, ivory trimmed, for tapers or bottles. Each, .25
 1556.—Ditto, pasteboard, round English form, holding 2 grammes, useful for putting up ordinary reagents, pills, or small articles of jewelry. Per doz., .25  1556
 1557.—Ditto, ditto, ordinary form, round, in nests of 5, Per doz. .25
 1558.—Ditto, pasteboard, English form, extra quality, cherry lining, 2 grammes. Per doz. boxes, .25
 1559.—Ditto, ditto, 4 grammes. “ .40
 1560.—Ditto, ditto, 3 in a nest, 1's to 3's. “ .45
 1561.—Ditto, ditto, 5 in a nest, 2's to 6's. “ .48
 1562.—Ditto, ditto, 6 in a nest, 1's to 6's. “ .50
 1563.—Ditto, for Lip Salve, plain. Per doz. boxes, \$1.00 
 1564.—Ditto, with legend “ Lip Salve.” “ 1.25 1563
 1565.—Ditto, of best China porcelain, with wreath and legend, “ Lip Salve.” Per doz., \$3.50
 1566.—Ditto, ditto, rose and gilt, tipped. “ 2.50
 1567.—Ditto, ditto, turned boxwood, flat form. “ 1.00
 1568.—Ditto, ditto, turned rosewood, “ “ 1.25
 1569.—Ditto, small dove-tailed pine wood.
 3 x 3 x 15 3 x 3 x 20 12 x 12 x 30
 .35 .40 \$1.00 each

1570.—Box Sieves, Griffin's, 3 partitions, used in connection with the blow-pipe. Each, \$2.50

1571.—Bologna Flasks, of thick unannealed glass, will bear a smart blow, but fracture when a hard angular body is dropped into them. Per doz., \$1.50

1572.—Bombs, see Candle Bombs.

1573.—Brass Jets, see Jets.

1574.—Brushes, fine, for Feather Tubes. Each. .25

1575.—Ditto, for ordinary Test Tubes. “ .10

1576.—Ditto, ditto, large ditto, ditto. “ .15

1577.—Ditto, ditto, extra large ditto, ditto, or Bottles. “ .20

(The above test tube brushes are all made of galvanized iron or copper, to prevent rust.)



1574 1575

- 1578.—**Brushes**, for bottles, patent tin handles. Each, .25
 1579.—Ditto, ditto, wood handles, large size. “ \$1.00
 1580.—Ditto, Camel’s hair, for cleaning the button, in assay-
 ing. Each, .25
 1581.—Ditto, bristles, ditto. “ .50
 1582.—**Bubble Pipe**, of clay, with connecting piece of brass, for
 blowing hydrogen bubbles. Each, .40
 1583.—Ditto, ditto, of brass. “ .75.



1583



1587



1588



1589

- 1584.—**Bulb Tubes**, in which ignited oxide of copper may be
 cooled; hard glass; small sizes. Per doz., .60
 1585.—Ditto, in which ignited oxide of copper may be cooled;
 hard glass; large sizes. Each, .10 to .25
 1586.—**Bungs**, of selected cork, from $\frac{3}{4}$ in. to 2 in. Doz. .20 to .70
 1587.—**Burettes**, Bink’s, English form, with wooden foot.

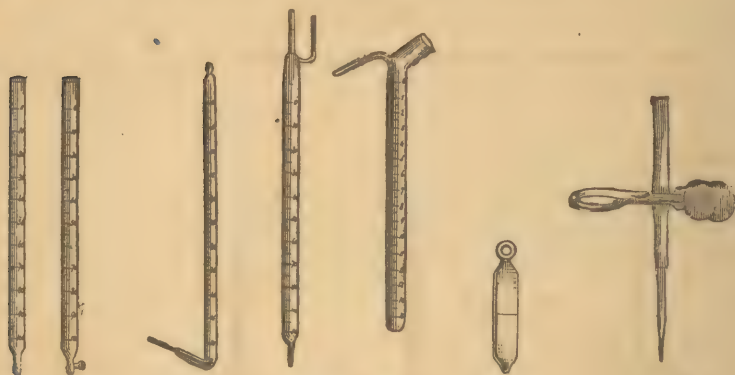
| | | | | |
|---------------|----------------|---------------|----------------|---------------|
| 25 | 25 | 50 | 50 | 100 c. c. |
| $\frac{1}{8}$ | $\frac{1}{10}$ | $\frac{1}{2}$ | $\frac{1}{10}$ | $\frac{1}{2}$ |
| \$1.50 | 1.75 | 1.75 | 2.25 | 2.25 each. |

- 1588.—Ditto, Gay Lussac.

| | | | | |
|---------------|---------------|----------------|---------------|---------------|
| 25 | 50 | 50 | 100 | 100 c. c. |
| $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{10}$ | $\frac{1}{8}$ | $\frac{1}{2}$ |
| \$1.50 | 2.00 | 2.50 | 2.25 | 2.50 each. |

- 1589.—Ditto, Geissler’s, with ground glass stopcock running the
 whole length of tube and lateral tube for receiving fluids near
 the top.

| | | |
|----------------|----------------|---------------|
| 25 | 50 | 100 c. c. |
| $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{8}$ |
| \$2.50 | 3.25 | 4.00 each. |



1590 1591

1592

1593

1594

1597

1598

1590.—Burettes, Mohr's.

| | | | | | | | |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 20 | 20 | 25 | 25 | 30 | 40 | 50 | 50 |
| $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ |
| \$1.25 | 1.50 | 1.50 | 1.75 | 2.00 | 2.25 | 2.00 | 2.25 |
| 50 | 60 | 100 | 100 | 100 | 200 c. c. | | |
| $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | | |
| \$2.50 | 2.50 | 2.50 | 2.75 | 2.75 | 2.00 each. | | |

1591.—Ditto, ditto, with glass stopcock.

| | | | | | |
|----------------|----------------|----------------|----------------|----------------|----------------|
| 25 | 25 | 50 | 50 | 100 | 100 c. c. |
| $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ |
| \$2.25 | 2.50 | 3.00 | 3.25 | 3.50 | 4.00 each. |

1592.—Ditto, for Chameleon process, with lateral tube, joined near the bottom.

| | |
|----------------|----------------|
| 25 | 50 c. c. |
| $\frac{1}{10}$ | $\frac{1}{10}$ |
| \$1.75 | 2.25 each. |

1593.—Ditto, Rammelsburg's, with lateral tubes, joined near the top, and sealed in to carry the test liquor, to avoid frothing.

| | |
|----------------|----------------|
| 25 | 50 c. c. |
| $\frac{1}{10}$ | $\frac{1}{10}$ |
| \$1.50 | 2.00 each. |

1594.—Ditto, Geissler's Chameleon, having a lateral tube running to the bottom.

| | |
|----------------|----------------|
| 25 | 50 c. c. |
| $\frac{1}{10}$ | $\frac{1}{10}$ |
| \$2.00 | 2.50 each. |

1595.—Burettes, Leslie's, see Leslie's Alkalimeters.**1596.—Burette Clamps.**

Each, .50

1597.—Burette Swimmers, or Erdmann's Float.

" .50

1598.—Burette Tips, with rubber attachments.

" .25

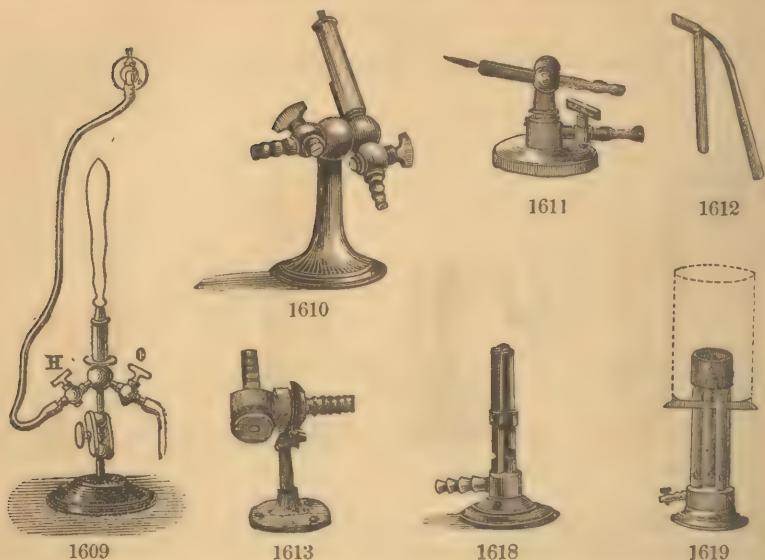
1599.—Burette Supports and Holders, see Supports.

BURNERS.

1600.—Burners, Argand standard register, as used with Bunsen's Photometer. Each, \$4.00



- 1601.**—Ditto, with flame apparatus, mounted on stand for spectral analysis or polarization of light. Each, \$6.00
- 1602.**—Ditto, Bunsen's plain. Each, \$1.25
- 1603.**—Ditto, with tripod on top, to support evaporating dish. Each, \$1.75
- 1604.**—Ditto, ditto, with ring to regulate the flow of air into the burner, to produce at pleasure blue or yellow flame. Each, \$1.35
- 1605.**—Ditto, new French pattern with air regulator, consisting of lever attached to the receiving tube, which raises and lowers at pleasure a cap over the air-vent, and at same time graduates the flow of gas. Each, \$2.50
- 1606.**—Ditto, ditto, with two holes in base of Burner, to attach to retort stand, without star. Each, \$1.75
- 1607.**—Ditto, ditto, Bunsen's improved new style of Burner, having a ratchet regulator in place of the ordinary air regulator, dispensing with stopcocks, and graduating the flow of air and of gas at the same time. It is simple, compact, convenient and entirely new. Each, \$2.75
- 1608.**—Ditto, ditto, having one receiver with double tube for gas and air, regulated by one stopcock; and also having a lateral jet, regulated by stopcock. A new invention, and powerful. Each, \$7.50
- 1609.**—Ditto, ditto, French, with universal joint and stopcocks for



the air and gas, for throwing the flame in horizontal or oblique directions. Each, \$10.00

1610.—Ditto, Bunsen's blast, having the tubes for receiving gas and air at right angles, with different size tips for regulating the jet. Each, \$7.50

1611.—Ditto, ditto, very small, for use in place of the mouth blow-pipe for producing a very fine taper flame. Each, \$5.00

1612.—**Burner Attachment**, for producing a gas blast, consisting of two brass tubes terminating in one jet, one of which is placed in the delivery tube of the ordinary Bunsen burner, and the other connecting with the blowing machine. Each, \$1.00

1613.—**Burners**, Bunsen's small blast, for fastening to the table, with one extra tip. Each, \$6.00

1614.—Ditto, Bunsen's plain, with star and chimney. " 2.00

1615.—Ditto, ditto, with star and porcelain plate to catch the ashes of the filter. Each, \$2.50

1616.—Ditto, ditto, with star, chimney and plate to catch the ashes of the filter, and provided with a thumb-screw at the base to raise and lower the burner. Each, \$3.00

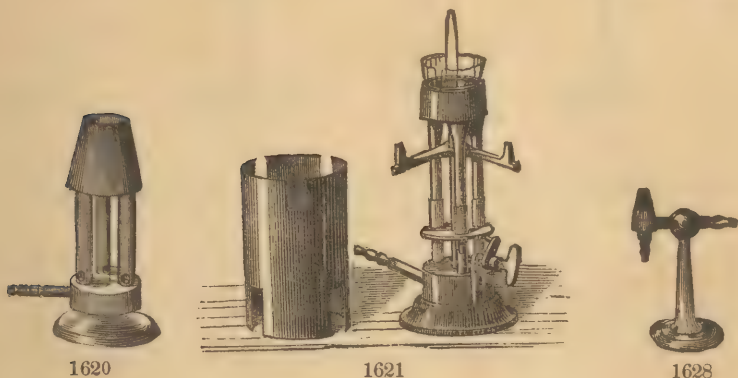
1617.—Ditto, ditto, plain, with two tubes. " 2.00

1618.—Ditto, ditto, plain, with three tubes. " 2.50

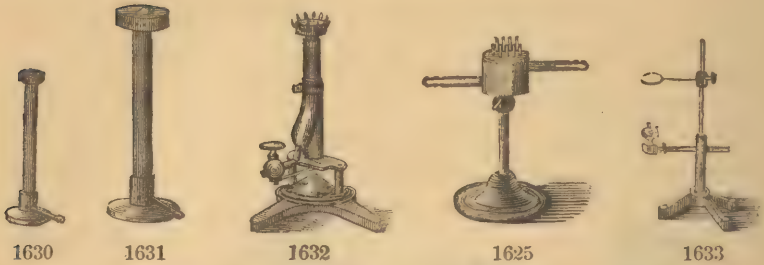
1619.—Ditto, Babo, with three tubes formed into one circular,

opening at top, with star supporting a sheet iron chimney and stopcock to regulate the flame; also having a centre tube.

Each, \$9.50



- 1620.**—**Burners**, Bunsen's, with three tubes and caps, arranged so that the flame touches every part of the crucible. Each, \$4.00
- 1621.**—Ditto, Berzelius's, having a sliding cap with thumb-screw attachment, to regulate the flow of air without stopcock, otherwise the same as the foregoing. Each, \$7.50
(The two styles of Burners, Nos. 1619 and 1621, produce a solid circular flame with a centre flame, generating a high degree of heat.)
- 1622.**—Ditto, Bunsen's, with four tubes. Each, \$3.00
- 1623.**—Ditto, ditto, six tubes. " 4.00
- 1624.**—Ditto, ditto, eight tubes. " 5.00
- 1625.**—**Burner**, Griffin's Blast Gas, with nine tubes grouped together, giving a very powerful heat when attached to a blowing table and surrounded by a fire clay cylinder. Each, \$13.50
- 1626.**—**Burners**, Bunsen's, French, with two tubes bent off in separate directions. Each, \$2.50
- 1627.**—Ditto, ditto, with three tubes bent off in separate directions. Each, \$3.50
- 1628.**—Ditto, Blast, terminating in six tips. 6.50
- 1629.**—Ditto, Bunsen's, newly invented, consisting of seven Bunsen burners, arranged in a circle, each burner having a cap to spread the flame, all enclosed in a sheet-iron frame, which concentrates the heat, and, at the same time, supports the vessel to be heated. Each, \$12.00



- 1630.**—Burners, Crown or Rose, consisting of a common burner, having a cap with the sides pierced, through which small jets of flame pass out. Each, \$1.75
- 1631.**—Ditto, ditto, large size, or locomotive, producing a high degree of heat. Each, \$5.00
- 1632.**—Ditto, ditto, ditto, with a lever attached by which the flow of air and flame is regulated at the same time. A new invention. Each, \$10.00
- 1633.**—Ditto, Mendelsohn, for heating watch glasses. “ \$1.75
- 1634.**—Ditto, with long tube and ordinary gas tip. “ 2.00
- 1635.**—Ditto, Specstone, Bunsen's, single tube. “ 2.00
- 1636.**—Ditto, ditto, Rose's. Smaller, \$2.50; larger, \$3.00 each.

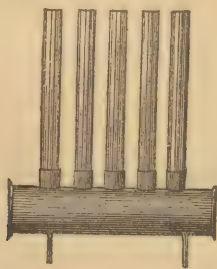


- 1637.**—Ditto, Vulcan, cast iron top and bottom, dispensing with the tripod. Each, .75
- 1638.**—Ditto, Sand, flat shape, consisting of a hollow iron frame filled with sand and cement, through which the gas exudes. Each, \$1.25
- 1639.**—Ditto, ditto, ditto, on tripod. “ 1.25
- 1640.**—Burner Forks, for holding burner when attached to a retort support. Each, .50

- 1641.—Burner Plates**, porcelain, for holding the ashes when filters are burned. Each, .75
- 1642.—Ditto**, tips, of silicated steatite for attaching to the ends of common gas burners. Each, .25 to .50
- 1643.—Ditto**, tubes, or jets with flattened ends to introduce into an ordinary Bunsen burner, to produce a flat flame. Each, .25
- 1644.—Ditto**, furnaces, porcelain, to surround the burner to increase the heat. Each, \$1.25
- 1645.—Burnishers of Agate.** “ 1.50
- 1646.—Bolt-head experiment in Pneumatics.** Apparatus for. Each, \$4.00
- 1647.—Bell in vacuo.** “ 4.00
- 1648.—Bursting Squares.** Per doz., \$2.50
- 1648.A—Colorimeter**, for examination of sugars and syrups, after Dr. Scheibler's method.



1649



1656



1661

- 1649.—Candle Bombs**, small glass bulbs, filled with colored water and sealed, which explode when heated. Per doz., .40
- 1650.—Caoutchouc**, unvulcanized, in sheets, for forming tubes, covering jars, etc., $\frac{1}{16}$ in. thick. Per square foot, .75
- 1651.—Ditto**, vulcanized, ditto, ditto. “ .70
- 1652.—Ditto**, Balls, pierced to attach to pipettes, syphons, etc., round and pear shape. Each, .50
- 1653.—Ditto**, caps, vulcanized, for fitting glass tubes to glass bottles, etc., 1, 2 and 3 tubes. Each, .20 to .40
- Ditto, Connectors. See Rubber Connectors.
- Ditto, Stoppers. See Rubber Stoppers.
- Ditto, Tubing. See Rubber Tubing.
- 1654.—Capillary Plates**, for showing the parabolic curve. Per set, \$2.00
- 1655.—Ditto**, Tubes, in sets unmounted. Each, .40

1656.—Capillary Tubes, mounted in japanned cistern. Per set, \$2.00

1657.—Ditto, Tubing, 5 feet lengths. Each, .10

1658.—Caps for bell jars, globes, etc., of brass.

| | | | | | | |
|---------------------------|----------------|----------------|----------------------------------|----------------|-----|--------------------|
| Sizes, $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ to $1\frac{1}{2}$ | $1\frac{5}{8}$ | 2 | $2\frac{1}{2}$ in. |
| | .55 | .60 | .65 | .70 | .75 | .80 .85 each. |

1659.—Ditto, for gas bags, etc.

| | | |
|---------------|---------------|----------------------------------|
| $\frac{1}{2}$ | $\frac{5}{8}$ | $\frac{3}{4}$ to 1 in. diameter. |
| .50 | .55 | .60 each. |

Ditto, for deflagrating jars. See Deflagrating Covers.

1660.—Ditto, for galli pots, small jars, etc., silvered. Per doz., .10

1661.—Ditto, porcelain, for lamp chimneys, to economize and reflect the light.

| | | | |
|--------|-----|-----|-----------|
| Nos. 1 | 2 | 3 | 4 |
| .50 | .60 | .75 | .90 each. |

1662.—Canules, French. Per doz., \$1.25

Capsules of glass. See Glass Evaporating Dishes.

1663.—Ditto, of horn.

| | | | | | | | | |
|----------------|-----|----------------|-----|----------------|-----|----------------|----------------|------------------|
| $1\frac{3}{4}$ | 2 | $2\frac{1}{2}$ | 3 | $3\frac{1}{2}$ | 4 | $4\frac{1}{2}$ | $4\frac{1}{2}$ | $5\frac{1}{2}$ |
| .20 | .24 | .32 | .36 | .45 | .56 | .72 | .88 | \$1.07 per pair. |

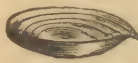
Ditto, of iron. See Sand Baths.



1664



1667



1669



1672



1673

1664.—Ditto, ditto, transparent glazing inside, lipped.

| | | |
|----------|------|------------|
| Sizes, 5 | 6 | 7 in. |
| \$1.20 | 1.40 | 2.00 each. |

1665.—Ditto, of platinum, sizes as required. Per oz. (gold), \$10.00

1666.—Ditto, of silver, sizes as required. " " 2.50

1667.—Ditto, of porcelain, nests of 5, without lip, glazed inside, similar to watch glasses, very shallow. Per nest, \$1.00

1668.—Ditto, ditto, 3 in nest. " .75

Ditto, ditto, French. See Evaporating Dishes.

1669.—Ditto, ditto, with a sharp lip, nests of 4, very thin and transparent. Per nest, .80

1670.—Ditto, ditto, with rounding lip, nests of 4, with perpendicular sides and flat bottoms, about $\frac{3}{4}$ of an inch deep. Per nest, \$1.00

1671.—Ditto, round bottom, without lip, glazed throughout, about 2 inches in diameter across the top and deep. Per doz., \$2.50

1672.—Ditto, Plattner's, flat bottom and straight sides, holding about $\frac{1}{2}$ ounce, semi Berlin. Per doz., \$1.25

- 1673.**—**Capsules**, Plattner's flat bottom and oblique sides, holding about $\frac{1}{3}$ of an ounce. of fine Meissen porcelain. Each, .20
- 1674.**—Ditto, of porcelain, very small, for blow-pipe fusions, and of extra hard and tough porcelain. Per doz., \$1.20
- 1675.**—Ditto, half-egg form, of extra fine and thin porcelain, to sustain a high heat. Per doz., \$1.75
- Ditto, with handles. See Royal Berlin Casseroles.
- Ditto, other forms. See Digestors, Evaporating Dishes, Combustion Boats, etc.
- 1676.**—**Carbonic Acid**, liquified, in sealed barometer tubes, enclosed in velvet lined leather cases. Each, \$6.50
- Ditto, ditto, apparatus. See Potash Bulbs.
- 1677.**—**Carbons**, for Bunsen's and other batteries, of French graphite.
- | | | |
|----------|-----|-----------|
| Sizes, 6 | 7 | 10 in. |
| .40 | .50 | .75 each. |
- 1678.**—Ditto, flat, $\frac{1}{4}$ inch thick, 10 x 6 in. Each, .75
- 1679.**—Ditto, pencils, of pure graphite, for the electric light. Per inch, .6



1680

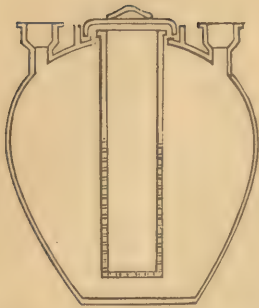


1681

- 1680.**—**Carbonic Acid Generator**, consisting of a glass jar, containing a bell-shape gas holder and leaden tripod. The gas is delivered through a gallows screw connector.

| | | |
|---------|-------|--------------|
| 12 | 15 | 20 in. high. |
| \$10.00 | 15.00 | 20.00 each. |

- 1681.**—**Ditto, Water Apparatus**, 1 quart capacity, made of glass covered with reed netting, porcelain foot. Each, \$7.50



1682



1686

1682.—Carboys of Earthen Ware, with filter, for the manufacture of chlorine. Each, \$10.00

1583.—Ditto, ditto, for the concentration of acid or ammonia.

| | |
|---------|-------------|
| 60 | 100 litres. |
| \$10.00 | 12.00 each. |

1684.—Carthesian Imps, ordinary, black. Each, .20

1685.—Ditto, ditto, fine quality. Each, .75 to \$1.00

1686.—Ditto, ditto, with jar, additional. Each, \$1.50

1686.A—Cases, to hold 6 bichromate battery cells. " 1.50

1687.—Caseroles, semi Berlin, ordinary form, with lip and straight-flattened handle, glazed inside and outside.

| | | | | | |
|---------------|-----|-----|-----|--------|------------|
| Sizes, No. 00 | 0 | 1. | 2 | 3 | 4 |
| Price, .35 | .50 | .70 | .85 | \$1.00 | 1.35 each. |



1687



1688



1690



1691

1688.—Ditto, deep, for coloring pots used in manufacturing jewelry.

| | | |
|----------------|------|------------|
| Sizes, 5½ | 6½ | 7½ in. |
| Prices, \$3.00 | 4.00 | 5.00 each. |

1689.—Ditto, Royal Berlin, lipped, looped handle glazed inside and out, 1½ ounce capacity each. Each, .40

1690.—Ditto, ditto, lipped and round porcelain handle.

| | | |
|-----|-----|-----------|
| 1 | 2 | 3 oz. |
| .30 | .35 | .40 each. |

1691.—Ditto, of finest French porcelain, glazed inside and out, except the bottom, having cover and wooden handle.

| | | | | | |
|--------|------|------|------|------|------------|
| Nos. 5 | 4 | 3 | 2 | 1 | 1 extra. |
| \$1.00 | 1.25 | 1.50 | 2.00 | 2.25 | 4.00 each. |

1692.—Caseroles, Meissen, glazed throughout, except the bottom, loop handle.

| | | |
|--------|--------|------------|
| Nos. 3 | 2 | 1 |
| .75 | \$1.00 | 1.25 each. |

1692.A—Cassolettes, Lubin's, of rosewood, for holding small quantities of perfume. Per doz., \$3.00

1693.—Cat Skins, for exciting electric apparatus. Each, \$1.00

1693.A—Caustic Holders, of ivory, with metallic ends. " 4.00

1694.—Cells, carbon, for fusion supports. " .50

1695.—Ditto, porous, French and German, imported.

| | | | | | |
|-------|-----------|---------------|-----------|---------------|-----------|
| 2 x 4 | 2 1/4 x 4 | 2 1/4 x 5 1/2 | 2 1/4 x 6 | 2 3/4 x 7 1/2 | 3 x 8 in. |
| .12 | .15 | .20 | .30 | .45 | .50 |



1696.—Ditto, ditto, sizes above, 3 x 8. Each, .75 to \$1.00

1697.—Ditto, oval microscopic of plate glass, 1 1/2 x 3 inches.

Each, .50 1695

1698.—Centimetre Measures, of boxwood, having centimetres on one side and English inches on the other. Each, .50

1699.—Ditto, ditto, of ivory, in millimetres, up to 5 centimetres.

Each, \$2.00

1700.—Ditto, ditto, of ivory, having English inches on one side and graduated up to 1 metre. Each, \$2.25

1701.—Charcoal Pieces, prepared for use in blow-pipe fusions.

4 pieces for .25

1702.—Ditto, Borers, Plattner's, of steel, with spatula handle.

| | | |
|--------|-----|-----------|
| Nos. 1 | 2 | 3 |
| .30 | .35 | .40 each. |



1703.—Ditto, ditto, with polished cocoa handles.

| | | |
|--------|-----|-----------|
| Nos. 4 | 5 | 6 |
| .50 | .60 | .75 each. |

1704.—Ditto, ditto, with eight points, with polished cocoa handles and brass ferule.

| | | |
|--------|------|------------|
| Nos. 7 | 8 | 9 |
| \$1.00 | 1.20 | 1.25 each. |

1705.—Ditto, Holder, with platinum attachment and wood handle. Each, \$3.25

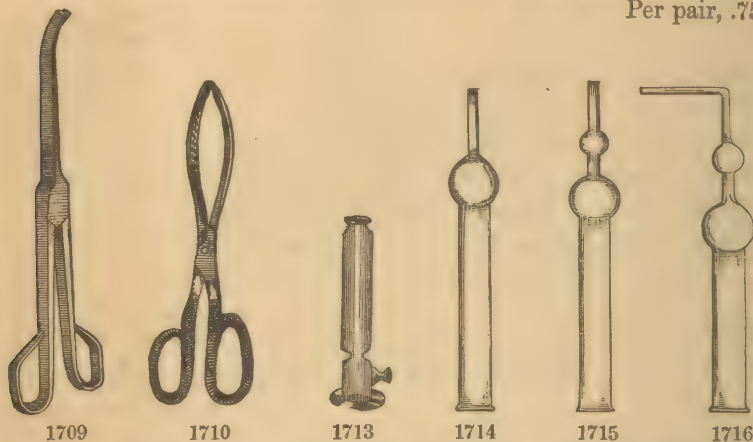
1706.—Ditto, Saw, small. " .50

1707.—Ditto, ditto, large. " .75

1708.—Charcoal Spatula, steel, Plattner's, cocoa handle. Ea. .50

1709.—Ditto, Tongs, bent, 18 inches long, light weight.

Per pair, .75



1709

1710

1713

1714

1715

1716

1710.—Ditto, ditto, bent inwards, with the insides rasped and handles twine wound, for cold weather. Each, \$1.25

1711.—Ditto, Sticks, for breaking glass, according to size.

Per doz., .50 to .60

1712.—Chisels, of Steel, Plattner's, for clipping ingots. Each, .50

1713.—Chloride of Calcium Jars, on foot, with tubulature at side, near the bottom, for drying gases.

| | | | | | |
|-----|-----|--------|------|------|------------|
| 4 | 8 | 12 | 16 | 24 | 32 oz. |
| .65 | .85 | \$1.00 | 1.50 | 2.50 | 3.50 each. |

1714.— Ditto, ditto, Tubes, small, straight, assorted. Each, .15

1715.—Ditto, ditto, 2 bulbs, 8 inch. Each, .25

1716.—Ditto, ditto, bent ends. Each, .25

1717.—Ditto, ditto, large size; 12 to 16 inches. Each, .50

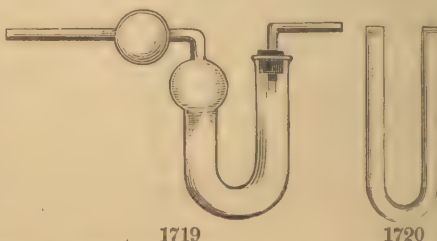
1718.—Ditto, ditto, straight, with small tubes inserted in a cork at either end. Each, .20

1719.—Ditto, ditto, Marchand's, U shape, with connecting tube.

Each, .50

1720.—Ditto ditto, U shape, plain.

| | | |
|-----|-----|-----------|
| 6 | 8 | 10 inch. |
| .30 | .50 | .60 each. |



1719

1720

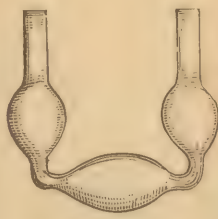
1721.—Chloride of Calcium Tubes, in setts of 3, each forming around the other. Per set, .75



1722



1723



1727



1722.—Ditto, ditto, ditto, with 3 bulbs, small.

4 to 5 inches.

8 in.

.40

.75 each.

1723.—Ditto, ditto, U shape, Fresenius' form, 2 bulbs in each limb, and half-bulb in connecting tube.

Each, .75

1724.—Ditto, ditto, U shape, with drip in the centre.

Each, \$1.00

1725.—Ditto, ditto, with stopcock in the drip.

Each, \$3.50

1730

1726.—Ditto, ditto, V form, 9 inches high.

Each, .60

1727.—Ditto, ditto, Weeber's, U form, having 3 large bulbs.

Each, .75

1728.—Charts, colored, showing the spectra of stars and metals, according to Kirchoff and Bunsen. Size, 28 x 40

Each, \$3.25

1729.—Ditto, ditto, in sets of 3.

9.00

1730.—Ditto, of snow crystals, showing the different forms assumed by frozen vapor. Size, 24 x 36.

Each, \$4.00

1731.—Chlorine Gas Generating Apparatus, consisting of glass flask, safety funnel, and delivery tube.

pts.

qts.

$\frac{1}{2}$ gal.

.90

\$1.10

1.35 each.

1732.—Ditto, ditto, with wash bottle.

pts.

qts.

$\frac{1}{2}$ gal.

\$1.15

1.35

1.90 each

1733.—Ditto, ditto, apparatus for generating, consisting of lamp, pneumatic trough, iron stand, flasks, sand bath, etc.

1712

Each, \$10.00





1734



1736

- 1734.—Chlorine Gas Apparatus, Silliman's method. Each, \$6.00
 1735.—Ditto, absorbing apparatus, Bunsen's, for use in volumetric analysis, as described in Mohr's titrir method, exclusive of stand and lamp. Each, .75
 1736.—Ditto, ditto, Bunsen's style. " .75
 1737.—Ditto, ditto, Mohr's, without jar. " \$1.25
 1738.—Ditto, Meter, Descroizelle's, graduated in 100 c.c. " 2.50
 1739.—Ditto, ditto, Gay Lussac, graduated in 100 c.c. " 2.50
 1740.—Ditto, ditto, Mohr's. " 1.25
 1741.—Ditto, Bottles, of cobalt glass, 1 litre, with glass cap, and tightly-fitting joint. Each, \$2.00
 1742.—Ditto, Jar, stout glass for burning substances in chlorine. Each, \$3.00 to 5.00
 1743.—Ditto, Safety Pipette, according to Mohr, with safety tube, rubber tube, and pinch-cock.

Each, \$1.00

Ditto, Gas Bottles. See Gas

Bottles.



1744

- 1744.—Ditto, Distilling Apparatus, for distillation of chlorine and iodide of potassium, according to Fresenius. Each, \$1.00
 1745.—Ditto, ditto, according to Mohr, consisting of two flasks, connecting tube, safety tube, and stopcock. Each, \$1.50
 1746.—Chime, of 2 bells. " 2.50

- 1747.—Chime, of 3 bells. Each, \$3.25
 1748.—Ditto, of 5 bells. “ 5.00



- 1749.—Clamps, wooden, for holding test tubes in the flame. Each, .20
 1750.—Ditto, larger, with a spring for holding larger tubes. “ .50
 1751.—Ditto, heavy iron, with rod to attach to the counter. “ \$1.00
 1752.—Ditto, in sets, with cork, lined jaws. Per pair, 3.00
 1753.—Ditto, smaller, of iron, to attach to a retort stand, also having cork-lined jaws. Each, \$1.25
 1754.—Ditto, for watch glasses, Dr. Craig's form. “ .20
 1755.—Ditto, ditto, Hoffman's form. “ .20
 1756.—Ditto, ditto, Mohr's form.

| | | | |
|-----|-----|-----|-----------|
| 3 | 4 | 5 | 6 in. |
| .25 | .30 | .35 | .40 each. |

- 1757.—Ditto, for holding hot test tubes, metallic, with wooden handle. Each, .50

Ditto, for batteries. See Binding Clamps.

Ditto, wooden, for burettes, pipettes, retorts, etc. See Supports.

Clay Supports. See Crucible Supports.

- 1758.—Cobalt Bottles, with cap and long stopper, German glass.

| | |
|---------------|----------------------------------|
| $\frac{1}{2}$ | 1 oz. |
| .35 | .50 each. See also Acid Bottles. |

Ditto, Glasses, used in testing colored flame. See Colored Glasses.

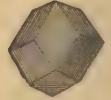
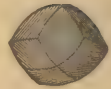
Coddington Lenses. See Lenses and Loups.



1759



1760



1764

1759.—Coffee Machines, glass and porcelain, French.

Each, \$7.50

1760.—Ditto, ditto, porcelain, German, for preparation of coffee for the table, by infusion. A very highly prized apparatus by those who use it.

Nos. 3
\$3.50

4
4.50

5
6.00 each.

Coils, Ruhmkorff's. See Electrical Coils.

Colanders. See Straining Dishes, Baskets, Filters, etc.

1761.—Collection of Crown Diamonds, glass models, consisting of Kohinoor and three others of the royal diamonds, in a nice velvet lined, morocco case. Each, \$20.00

1762.—Ditto, of artificial gems, showing the form of crystalization of the precious stones; also, the different styles in which diamonds are cut, in a velvet-lined mahogany box. Each, \$20.00

1763.—Ditto, of glass crystals, in a velvet-lined box. " 15.00

1764.—Ditto, of crystallographic, models in wood Rose's. 104 pieces, Each, \$20.00

1765.—Ditto, ditto, smaller, 34 pieces. " 9.00

1766.—Ditto, ditto, primary forms.

1767.—Ditto, ditto, of glass, with strings, for showing their axes.

1768.—Ditto, of 10 rare specimens for spectral analysis, with tubes having platinum ends, in a highly polished case of boxwood. Complete. Per set, \$7.50

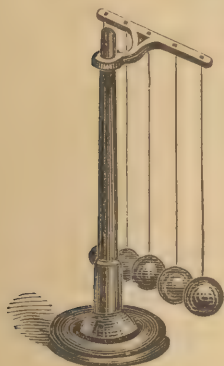
1769.—Ditto, of objects for examination by the solar microscope, mounted, on cork. \$25.00

1770.—Collection of Nitrogen disengaged during combustion of organic bodies. Simpson's apparatus for. .75

Collections of apparatus. See the latter part of this book.

Ditto, of minerals, fossils, etc. See Minerals.

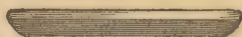
1771.—Collision Balls, set of 6 ivory balls, mounted on mahogany frame, graduated arc. \$20.00



1772



1778



1776

1772.—Ditto, ditto, set of 5 balls, of hard wood, mounted. \$3.50

Collodion Balloons. See Balloons.

1773.—Colored Glasses, for fancy glass blowing, in rods about 3 feet long. Each, .25

1774.—Ditto, Glass Plates, used in testing colored flame.

| | | |
|-----------|-----|-------------|
| Size, 3x3 | 4x4 | 5x5 inches. |
| .15 | .20 | .25 each. |

Color Tests. See Tests papers.

1775.—Color Test Slab, of porcelain, having 12 cavities; $4\frac{1}{4}$ x $2\frac{1}{2}$ inches. Each, .75

1776.—Combustion Boats or Capsules, of porcelain.

| | | |
|---------------------|---------------------|-----------|
| $2\frac{3}{4}$ to 3 | $3\frac{1}{4}$ to 4 | 6 in. |
| .20 | .30 | .50 each. |

1776.A—Ditto, ditto, of platinum. Price, per grain, .3

1777.—Combustion Furnace, Storers, consisting of 2 tubes, surrounded by a sheet-iron frame, having the top covered with wire gauze. Each, \$1.50

1778.—Ditto, Liebig's, as improved by Stenhouse, of sheet iron, for use with charcoal.

| | |
|------------------------|-----------------|
| Length, 18 in., \$2.75 | 24 in., \$3.25. |
|------------------------|-----------------|

1779.—Ditto, Bunsen's, having 25 burners. Imported. Each, \$60.00

1780.—Ditto, American. " 50.00

1781.—Combustion Furnace, French, having 10 burners.

Each,
\$30.00

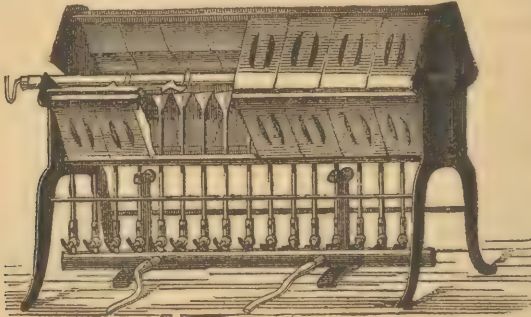


Fig. 4.

1781

1782.—Ditto, ditto, for use with coal oil, as invented and employed by St. Clair Deville, with one burner, dropping tube and doors to set in for a draft, (without tank.)

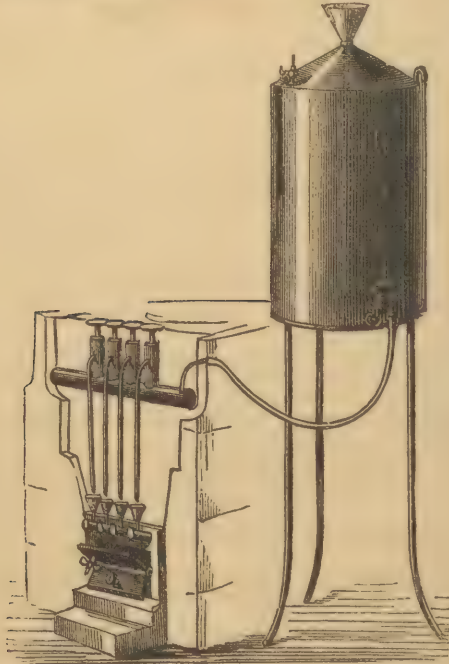
Each, \$12.00

1783.—Ditto, ditto, with 2 burners.

“ “ 18.00

1784.—Ditto, ditto, with 3

“ “ 22.00

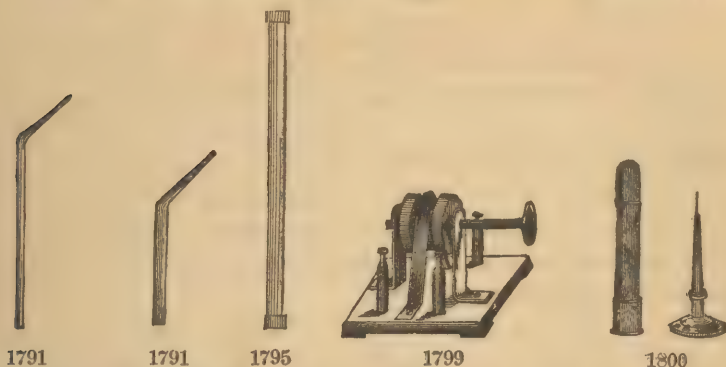


1785

1785.—Ditto, ditto, with 4 burners.

“ “ Each, \$30.00

- 1786.—Combustion Furnace, ditto, of St. Clair Deville, with 5 burners, without tank. \$40.00
 1787.—Ditto, ditto, tank for oil. Each, \$25.00
 1788.—Ditto, Lamps. See Combustion Furnaces with gas
 1789.—Ditto, Foil of Copper, for enveloping the tube in organic analysis. Per ounce, .5
 1790.—Ditto, Tubing, of genuine hard, infusible Bohemian glass. (For sizes, see Glass Tubes.) Per lb., \$1.25



- 1791.—Ditto, ditto, $\frac{1}{2}$ to $\frac{5}{8}$ in. diameter, drawn to a point and bent for Liebig's furnace. 18 24 in.
 .40 .50 each.
 1792.—Ditto, Tubes, of best infusible Bohemian glass, sealed at one end, for nitrogen determinations. 18 24 in.
 .35 .45 each.
 1793.—Ditto, ditto, porcelain, straight, $\frac{1}{4}$ inch bore. Each, .50
 1794.—Ditto, ditto, fine French, $1\frac{1}{2}$ in. bore. " \$1.50
 1795.—Ditto, ditto, Meissen porcelain, flanged at both ends, and glazed inside. $\frac{3}{8}$ 1 2 in. diameter.
 .75 \$1.00 2.00 each.
 1796.—Ditto, Bricks, of fire clay, for use with Bunsen's furnace. Each, .20
 1797.—Ditto, Supports, for the trough. " .10
 1798.—Ditto, Troughs, of fire clay, for supporting the tubes, 6 to 8 in. long. Each, .20
 1799.—Commutators, or pole changers, for reversing the electric current. Each, \$9.00 to 15.00
 1800.—Compasses, mounted on brass stands, swung on agate

pivots, resting on fine steel points, with polished wooden cases for carrying them. Each, \$2.50



1801



1803



1806

1801.—Compasses, plain, steel bearings. Each, .75

1802.—Ditto, brass cases, with spring stop and agate bearing.

No. 1, \$1.00

No. 2, \$1.50 each.

1803.—Ditto, watch form.

No. 4, \$3.50

No. 3, \$4.00 each.

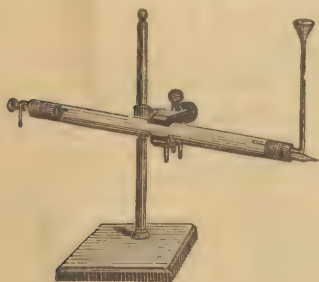
1804.—Ditto, ditto, finer graduation, an accurate registry, enclosed in brass cases, with cover, especially for geologists. Each, \$6.00

1805.—Ditto, ditto, German silver. " 6.50

1806.—Ditto, ditto, mineralogical, mounted, as above, with a sliding and swing indicator, showing the angle of the drip. Each, \$15.00

1807.—Ditto, ditto, very fine Geological, German silver-mounted watch case, hung on agate, with a spring top, having also a sun dial arrangement, with universal meridian and registered meridian of chief cities in United States and Europe. Ea. \$27.50

1808.—Compound Bar, for showing the expansion and contraction of two metals joined together, under the influence of extremes of temperature. Each, \$1.00



1809



1810

1809.—Condensers, Liebig's form, of glass, small, unmounted.

Each, \$1.00

1810.—Ditto, ditto, large, mounted.

" 2.00

- 1811.—**Condensers**, Liebig's form, japanned tin. Ea. \$3.50
 1812.—Ditto, brass soldered, mounted on stand. " 6.00
 1813.—Ditto, ditto, brazed, with movable joints, sliding rod, glass tube, fitted, etc., complete. Each, \$7.50
 1814.—Ditto, V form, with small tube fitted into each opening, with a rubber stopper Each, .50 to \$1.00
 1815.—Ditto, electrical, Riess's, for frictional electricity, and showing the theory of electrical condensers. Ea., \$20.00
 Caustic holder. See No. 1693A.



- 1816.—**Condenser**, Schöber's, new German invention.



1817



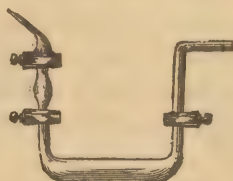
1819



1821



1818



1820



1822

- 1817.—**Condensing Tubes**, with two stopcocks, as per illustration; the wide part $\frac{3}{8}$ of an inch in diameter. Each, \$3.00
 1818.—Ditto, ditto, with stopcock on the bend. " 3.00
 1819.—Ditto, ditto, straight, with 3 stopcocks, as per illustration Each, \$4.00
 1820.—Ditto, ditto, U form, with two of the stopcocks on one limb, and one on the other, so that the liquid can be drawn off in small portions. Each, \$4.00
 1821.—**Condensing Chamber**, for use with air-pump, with movable interior tube, etc. Each, \$9.00
 1822.—**Ditto, Cylinder**, with stopcocks, complete, size, 7 x 1 $\frac{1}{4}$ in. Each, \$9.50
 1823.—Ditto, or boiling flasks, with lateral bent tube, as used in connection with Liebig's condenser, for boiling small quantities of liquids.



1823

| | | |
|-----|-----|-----------------|
| 1 | 2 | 3 oz. capacity. |
| .15 | .18 | .20 each |

1824.—**Condensing Worm**, of block tin, enclosed in a zinc tub, used for distilling water, etc., according to size.

Each, \$2.50 and upwards.

1825.—Ditto, ditto, of glass, enclosed in a glass receiver. Each, \$1.75

1826.—Ditto, ditto, with iron support. " 3.00

Ditto, Pumps. See Pneumatic Pumps.

1827.—**Conduction of Heat**, downwards, slowly in fluids, apparatus for showing. Each, \$2.50

1828.—**Conductometer**, for illustrating the comparative power of different metals for conducting heat. Each, \$2.50

1829.—**Cones**, dissected. " 2.50

1830.—**Cone of Platinum**, for supporting the filter in Bunsen's method of rapid filtration. Price, .75



1831



1831



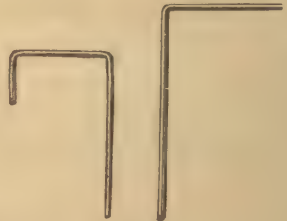
1832



1833



1834



1835

1831.—**Connecting or Drying Limb**, Mitscherlich's or Liebig's.

Each, .35

1832.—**Ditto, Tube**, for nitrogen apparatus. " .50

1833.—Ditto, ditto, of glass, or three way tubes, Y shape. " .25

1834.—Ditto, ditto, with three openings, T shape. " .25

1835.—**Ditto, Tubes**, bent at different angles. " .15

1836.—Ditto, ditto, with two or three lateral tubes. " .50

1837.—**Connectors of Brass**, with male and female screws. Each, .35



1838.—Ditto, ditto, with double male screw, without stopcock. Each, .35

1839.—Ditto, ditto, with double female screw, without stopcock. (See also stopcocks and bladder pieces.) Ea. .30

1837

1838

1839

Connections, for batteries. See Binding Screws and Clamps.

1840.—**Connectors**, gallows screw, Hare's. Each, \$1.00

1841.—Ditto, unvulcanized rubber, 2 in. long.

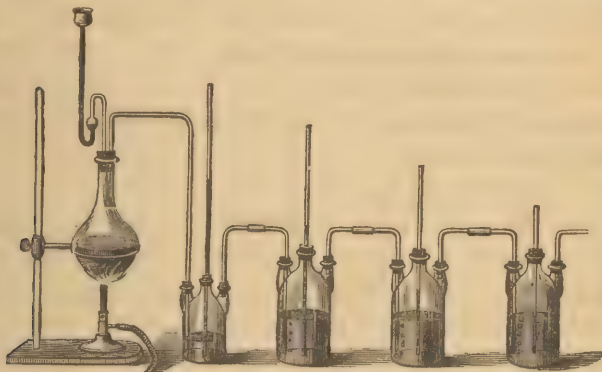
| | | |
|---------------|----------------|-------------------------|
| $\frac{1}{8}$ | $\frac{3}{16}$ | $\frac{1}{4}$ in. bore. |
| .40 | .50 | .60 doz. |



1840

1842.—**Connectors**, vulcanized rubber.

| | | | | |
|---------------|---------------|---------------|---------------|-------------------|
| $\frac{1}{8}$ | $\frac{1}{5}$ | $\frac{1}{4}$ | $\frac{3}{8}$ | $\frac{1}{2}$ in. |
| .25 | .30 | .40 | .45 | .55 per doz. |



1854

APPARATUS FOR MAKING CHLORINE.

1843.—**Cooper's Mercurial Receiver**. Each, .50 to .75

Copper Foil. See Combustion Foil.

1844.—Ditto, Sheet, for galvanic experiments. Per lb., .50

1845.—**Cork Teats**. Per doz., \$2.00

Corks, rubber. See Rubber Stoppers.

1846.—Ditto, champagne. " \$6.00

1847.—Ditto, velvet, long and small. " .10

1848.—Ditto, chemical, carefully selected.

| | | | | | | |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Nos. 0 to 5 | 5 | 6 | 7 | 8 | 9 | 10 |
| .06 | .07 | .08 | .10 | .11 | .13 | .16 per doz. |
| $\frac{3}{4}$ | $\frac{7}{8}$ | 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ |
| .18 | .20 | .22 | .25 | .31 | .35 | .41 |
| $1\frac{5}{8}$ | $1\frac{3}{4}$ | $1\frac{7}{8}$ | 2 in. | | | |
| .50 | .55 | .60 | .65 per doz. | | | |

1849.—Ditto, extra large and flat. Per doz., .75

1850.—**Cork Borers**, set of 12, each borer having a handle of ordinary brass. Per set, \$4.00



1851.—Ditto, ditto, set of 12, each best German make. 1850

| | | | | | | | | | | | |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------------------|-----------------|
| $\frac{1}{8}$ | $\frac{3}{8}$ | $\frac{1}{4}$ | $\frac{1}{8}$ | $\frac{3}{8}$ | $\frac{1}{2}$ | $\frac{3}{4}$ | $\frac{1}{2}$ | $\frac{1}{8}$ | $\frac{5}{8}$ | $\frac{1}{16}$ in. diam'r. | Per set, \$4.50 |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------------------|-----------------|

1852.—Cork Borers, set of 6. Each, \$2.25

1853.—Ditto, ditto, set of 3. " 1.10

The ordinary quality not kept in stock; the above are of the very best hardened brass.

1854.—Ditto, ditto, of steel, wooden handle.

| | | | |
|---------------|---------------|---------------|-------------------|
| $\frac{1}{8}$ | $\frac{1}{6}$ | $\frac{1}{4}$ | $\frac{3}{8}$ in. |
| \$1.50 | 1.70 | 1.80 | 2.00 each. |

Ditto, Files. See round files and rasps.

1855.—Ditto, Knife, for cutting corks.

Each, .25



1856.—Ditto, Pressers, of cast iron. " .50

1856

1857

1858

1857.—Ditto, ditto, of steel, usual style. Each, \$1.00

1858.—Ditto, ditto, with fine teeth and extra nib. " 1.25

1859.—Ditto, ditto, heavier. " 1.00

1860.—Ditto, Screws, for pocket. " .25

1861.—Ditto, ditto, larger, with wood handles. " .40

1862.—Ditto Lined Tong, of steel, for holding hot tubes.

Each, \$1.25



Cotton lamp-wick. See Wicks.

1863

1863.—Covers, convex, of glass, for covering Beakers, etc.

| | | | | | |
|--------|------|------|------|------|---------------|
| 3 | 3½ | 4 | 4½ | 5 | 6 in. |
| \$2.50 | 3.00 | 3.50 | 4.00 | 5.00 | 6.00 per doz. |

1864.—Ditto, glass, flat.

| | | | | | |
|-----|-----|--------|------|------|---------------|
| 2 | 2½ | 3 | 4 | 5 | 6 in. |
| .50 | .75 | \$1.00 | 1.25 | 1.50 | 2.00 per doz. |

Single covers, 20 per cent. higher.

1865.—A full set of ditto, one each size. .65

1866.—Ditto, ditto, with a hole in the side, for stirring rod.

| | | | | | |
|-----|--------|------|------|------|---------------|
| 2 | 2½ | 3 | 4 | 5 | 6 in. |
| .75 | \$1.00 | 1.25 | 1.50 | 2.00 | 2.50 per doz. |

Single covers the same style, 20 per cent. higher.

1867.—Ditto, with a hole bored in the centre, to receive a funnel.

| | | | |
|--------|------|------|---------------|
| 3 | 4 | 5 | 6 in. |
| \$2.00 | 2.50 | 3.00 | 3.50 per doz. |

Single ones, 20 per cent. higher.

1868.—Ditto, flat, round French plate glass, 2 in. Each, .25

1869.—Ditto, flat, square, ground glass.

| | | | | | | | |
|-----|--------|------|------|------|------|------|------------|
| 2 | 4 | 5 | 6 | 7 | 8 | 9 | 10 in. |
| .40 | \$1.00 | 1.50 | 2.00 | 2.40 | 3.00 | 3.25 | 4.00 each. |

Single glasses, 10 per cent. higher.

Ditto, other, flat. See glass plates.

1870.—Covers, glass, with knob, useful for covering choice specimens or small apparatus when laying on the table.



4
.50

7 in.
.75 each.

1870

1871.—Ditto, microscopic, very thin glass, cut in circles.

Per doz., .35; per ounce, \$4.00

1872.—Ditto, ditto, cut in squares. “ .30; “ \$3.00

1873.—Cremometer, Chevalier, with jar and thermometer.

\$1.50

1874.—Ditto, Quevenne, with jar and thermometer. 1.00

1875.—Ditto, glass foot, graduated, 0 to 12. .60

1876.—Crucibles, assay of unglazed porous clay, American.

Per doz., \$1.00



1877

1877.—Ditto French, unglazed white porous clay. doz. \$2.50

1878.—Ditto, Beaufay, French, soft, nearly white material, tall, narrow form, with spout, used for fluxing pots and for fusing enamel.

| NO. | HEIGHT. | WIDTH. | PRICE. |
|-----|------------------|-----------------|--------------|
| 1 | 2 | 1 $\frac{1}{2}$ | \$0.05 each. |
| 2 | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | .05 “ |
| 3 | 2 $\frac{3}{4}$ | 1 $\frac{1}{2}$ | .07 “ |
| 4 | 3 $\frac{1}{2}$ | 2 | .09 “ |
| 5 | 3 $\frac{3}{4}$ | 2 $\frac{1}{2}$ | .10 “ |
| 6 | 4 $\frac{1}{2}$ | 2 $\frac{1}{2}$ | .12 “ |
| 7 | 4 $\frac{3}{4}$ | 2 $\frac{3}{4}$ | .16 “ |
| 8 | 5 | 2 $\frac{5}{8}$ | .20 “ |
| 9 | 5 $\frac{1}{2}$ | 3 | .22 “ |
| 10 | 6 | 3 $\frac{1}{2}$ | .25 “ |
| 12 | 7 | 4 | .50 “ |
| 14 | 8 $\frac{1}{2}$ | 4 $\frac{3}{4}$ | .75 “ |
| 16 | 10 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 1.30 “ |
| 18 | 12 | 6 $\frac{1}{2}$ | 2.00 “ |

1879.—Crucible, Beaufay covers, round.

1 $\frac{1}{4}$ to 3 4 to 6 in.
.04 $\frac{1}{2}$.08 each.



1878



1880

1880.—Ditto, ditto, triangular, assorted sizes.

Each, .06

1881.—Crucibles, iron, with covers, 3 to 5 ounces.

Each, \$1.00



1879

1882.—Crucibles, plumbago, or black lead,

round, with lip suitable for the fusion of the most refractory metals, gold, silver, brass, steel, iron, glass, etc., not subject to crack, and may be used repeatedly for most metals.

Nos. 1 2 3 4 6 7 8 10 12 14 16 18 20 -
 .20 .25 .30 .35 .45 .50 .55 .75 \$1.00 1.15 1.31 1.47 1.63 ea.

1883.—Crucibles, Plumbago, covers, Nos. 1 to 4,
 Each, .10

Above No. 4, .02 extra, each number.

1884.—Ditto, cast iron.

$\frac{1}{2}$ pt.
 \$2.50

pts.
 2.75 each.



1882

1885.—Ditto, porcelain, from the Royal Berlin factory, with covers, glazed inside and out, except the bottom, uniform thinness.

| NO. | DIAMETER. | CONTENTS. | PRICE. |
|-----|------------------|----------------------|--------------|
| 000 | 1 inch. | $\frac{1}{8}$ ounce. | \$0.10 each. |
| 00 | $1\frac{1}{4}$ " | $\frac{1}{4}$ " | .15 " |
| 0 | $1\frac{1}{2}$ " | $\frac{3}{8}$ " | .25 " |
| 1 | $1\frac{3}{4}$ " | $\frac{1}{2}$ " | .30 " |
| 2 | $2\frac{1}{4}$ " | 1 " | .40 " |
| 3 | $2\frac{1}{2}$ " | 2 " | .50 " |
| 4 | 3 " | 4 " | .60 " |
| 5 | $3\frac{1}{2}$ " | 8 " | .75 " |

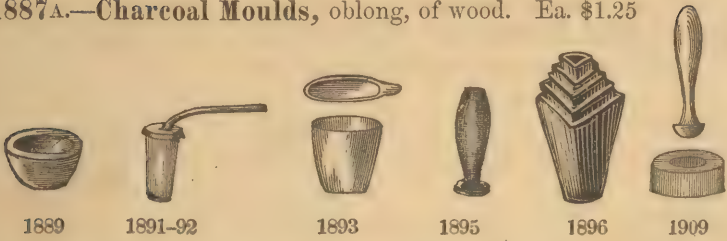
1886.—Crucibles, Meissen, tall form, with covers, glazed throughout.

| NO. | DIAMETER. | DEPTH. | CAPACITY. | PRICE. |
|-----|---------------------|---------------------|-------------------------|--------------|
| 10 | $\frac{5}{8}$ inch. | $\frac{1}{2}$ inch. | 15 grains. | \$0.10 each. |
| 9 | 1 " | $\frac{3}{4}$ " | 40 " | .13 " |
| 8 | $1\frac{1}{8}$ " | $\frac{1}{4}$ " | $2\frac{1}{2}$ drachms. | .16 " |
| 6 | $1\frac{3}{8}$ " | $1\frac{3}{8}$ " | $6\frac{1}{2}$ " | .20 " |
| 5 | $1\frac{3}{4}$ " | $1\frac{5}{8}$ " | $1\frac{3}{8}$ ounce. | .26 " |
| 4 | $2\frac{1}{4}$ " | $1\frac{1}{8}$ " | 2 " | .32 " |
| 3 | $2\frac{1}{2}$ " | 2 " | 3 " | .40 " |
| 2 | $2\frac{3}{4}$ " | $2\frac{3}{8}$ " | 4 " | .50 " |
| 1 | 3 " | $2\frac{5}{8}$ " | 6 " | .75 " |

1887.—Crucibles, unglazed, semi-porcelain, round, tall, with lip and covers.

Nos. 1 2 3 4 5 6 7 8 9 10 11
 Capacity,
 Price, .15 .20 .25 .35 .40 .45 .55 .65 .75 .85 \$1.00 each.

1887A.—Charcoal Moulds, oblong, of wood. Ea. \$1.25



1888.—Crucibles, full nests of the above, as 1887. Each, \$5.00

1889.—Ditto, glazed, porcelain, flat bottom, with covers.

| | | | |
|-----|-----|-----|-----------|
| 6 | 8 | 12 | 16 oz. |
| .40 | .45 | .55 | .65 each. |

1890.—Ditto, unglazed, biscuit ware, conical form, perforated cover and gas reduction tube.

| | |
|--------|-----------|
| Nos. 2 | 1 |
| .40 | .50 each. |

1891.—Ditto, conical form, of biscuit, flat bottom, and flat cover, perforated to permit the escape of gases, used for fusing nitrate of silver.

| | |
|----------------|--------------------|
| $1\frac{1}{2}$ | $1\frac{3}{4}$ in. |
| .25 | .30 each. |

1892.—Ditto, tubes, for the above. Each, \$1.25

1893.—Ditto, Platinum, of the best French hammered, which is generally conceded to be superior to the English in quality.

| | | | | | |
|---------------|---------------|---------------|---|----------------|-------|
| $\frac{1}{4}$ | $\frac{1}{2}$ | $\frac{3}{4}$ | 1 | $1\frac{1}{2}$ | 2 oz. |
|---------------|---------------|---------------|---|----------------|-------|

According to quantity.

Per gramme, .40 to .45

1894.—Ditto, Silver, 2, 4, 6, 8 ounces. Per oz., \$5.50

1895.—Ditto, Metallurgists, or poellons, of fire clay. Each, .20

1896.—Ditto, Sand, or Hessian, in nests, small fours. Per nest, .05

1897.—Ditto, ditto, small fives. " .05

1898.—Ditto, ditto, large fours. " .14

1899.—Ditto, ditto, large fives. " .15

1900.—Ditto, ditto, round sixes. " .20

1901.—Ditto, ditto, triangular sevens. " .30

1902.—Ditto, ditto, ditto, eights. " .35

1903.—Ditto, ditto, single No. 8. Each, .25

1904.—Ditto, single French No. 7. " .25

1905.—Ditto, ditto, No. 4. Per 100, \$10.00

1906.—Crucible Covers, sand or hessian, small. Each, .10

1907.—Ditto, ditto, large, round. " .40

1908.—Crucibles, roasting.

Per doz., .75

1909.—Crucible Moulds, of boxwood, for making charcoal crucibles, for quantitative blow-pipe assays.

Each, .75



1910

1911



1912



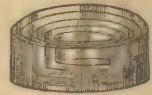
1914



1915



1916



1917

1910.—Ditto, ditto, Plattner's, of brass, in four pieces, for making small crucibles of clay.

Each, \$4.25

Capsules, blow-pipe. See Mixing Capsules.

1911.—Crucible Supports, of fire clay, for supporting crucibles in a furnace, to keep them at a distance from the grate.

Each, .10

Ditto, Tongs. See Tongs.

1912.—Cryophorus, Wollaston's, double bulb.

\$2.00

1913.—Ditto, ditto, smaller, or single bulb.

1.75

1914.—Crystal Drainers, conical.

3
.50

4
.55

5 in.
.75 each.

1915.—Ditto, ditto, hemispherical.

3
.30

4
.40

5
.50

6 in.
.70 each.

1916.—Crystallizing Dishes, of glass, on three glass feet.

3
.50

3½
.60

3¾ in.
.75 each.

1917.—Ditto, ditto, round, of thin Bohemian glass, flat bottom, with perpendicular sides, in nests of 9.

Per nest, \$2.00

In nests of 4, the smallest.

“ .75

1918.—Crystallizing Dishes, of porcelain, large oval shape, with cover.

Each, \$5.00

Crystallizing ditto. See flat bottom evaporating dishes.

Crytallizing Kettles. See kettles.

Cubic Centimetre Flasks. See Litre flasks.



1919.—Cupels, of pure French bone-ash, from the same manufacture as those used in the French mint; each cupel being carefully wrapped in cotton, and then enclosed in paper.

| | | | | | | | |
|---------------|---------------|-----|----------------|----------------|----------------|----------------|--------------------|
| Nos. 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| $\frac{3}{4}$ | $\frac{7}{8}$ | 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ in. |
| Price, .35 | .45 | .50 | .60 | .75 | .95 | \$1.25 | 2.25 per doz. |

1920.—Cupel Holders, or Trays, of iron, containing 12 partitions for holding cupels when several assays are under examination.

Each, \$1.00

1921.—Ditto, Moulds, of brass, used in forming the cupel.

Up to No. 5, \$2.50; larger, \$3.50 to 5.00

1922.—Ditto, ditto, of steel, Plattner's, for cupellation before the blow-pipe, consisting of two cupel moulds, different sizes, with corresponding pestles and a support; the cupels are exposed to the flame upon the moulds.

Each, \$2.75

Ditto, Furnace. See Furnaces.

1923.—Cupping Glasses. French. Per doz., \$1.25

1924.—Cups, annealing, American. " 1.00

1925.—Ditto, ditto, French. " 2.50

1926.—Ditto, porcelain, for feeding the sick and infants, plain.

Per doz., \$2.50

1927.—Ditto, ditto, stout. " 3.00

1928.—Ditto, ditto, covered, and swan neck. " 4.50

1929.—Ditto, for medicine, small. " 3.00

| | |
|--------------------------------------|-----------------|
| 1930.—Cups for Medicine, larger. | Per doz. \$3.50 |
| 1931.—Ditto, ditto, mounted on feet. | “ 6.00 |
| 1932.—Ditto, ditto, scoop shape. | “ .75 |



1933



1940



1941



1942



1943

1933.—Ditto, for Seidlitz's powders, of porcelain, having two partitions, one side to receive the acid and the other the salts, so that they become mixed in drinking or pouring out, producing constant fermentation. Each, .75

Ditto, porous. See Cells, porous.

1934.—Cutting Pliers, steel, ordinary “ .75

1935.—Ditto, ditto, extra strong, for crushing minerals. “ \$1.50

1936.—Cuvettes, or oblong drainers. “ .75

1937.—Ditto, Daguerrian, of fine Royal Berlin porcelain, having lip in one corner, about 6 to 9 inches. Each, \$2.00

Cylinders. See Porous Cells.

1938.—Ditto, glass, opened at either end.
 4 x 6 4 x 7 4 x 9. “ .40

1939.—Ditto, ditto, 3 3/4 x 6, 3 3/4 x 8 3/4. “ .50

1940.—Ditto, plain, on glass foot, flanged tops.
 4 6 8 10 12 in.
 .35 .40 .50 .55 .60 each.

1941. Ditto, tall, straight side, and ring around the top, for observing color of gases, viz., chlorine, etc., 30 x 3 inches. Each, \$2.00

1942. Ditto, plain, on glass foot, with ring around the top, roughed for glass covers.
 5 6 8 10 12 13 15 20 in.
 .30 .35 .37 .45 .50 .52 .55 .75 each.

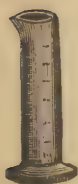
1943.—Ditto, ditto, pouring, lipped, on glass foot.
 5 6 8 10 12 13 15 20 in. high.
 .30 .35 .40 .50 .55 .57 .60 .70 each.

1944.—Cylinders, pouring, on wood foot, for specific gravity hydrometers, with flanged tops. Per doz., \$6.00

Ditto, ditto, with glass foot, for mercury. See Mercury Jars.

1945.—Ditto, glass, graduated into cubic inches.

| | | | | |
|-----|--------|------|------|------------|
| 5 | 12 | 20 | 30 | 50 c. in. |
| .70 | \$1.15 | 1.65 | 2.25 | 3.25 each. |



1946



1949



1950



1954

1946.—Ditto, ditto, with lip, graduated into cubic centimetres

| | | | | | | | | | | |
|-----|-----|-----|--------|------|------|------|------|------|------|--------------|
| 5 | 10 | 25 | 50 | 100 | 200 | 250 | 300 | 500 | 1000 | centimetres. |
| .50 | .60 | .75 | \$1.12 | 1.75 | 2.25 | 2.50 | 2.75 | 3.00 | 3.50 | each. |

1947.—Ditto, ditto, French.

250 c. c. \$2.25

500 c. c. \$3.25 each.

1948.—Ditto, on glass foot, with pouring lip and double graduation.

| | | | | | | | |
|--------|------|------|------|------|------|------|-------|
| 25 | 50 | 100 | 200 | 250 | 500 | 1000 | c. c. |
| \$1.20 | 1.40 | 2.00 | 2.25 | 2.50 | 3.50 | 4.00 | each. |

1949.—Ditto, ditto, stoppered, or mixing bottles.

| | | | | | | |
|---------------|---------------|------|------|------|------|-------|
| 25 | 50 | 100 | 200 | 500 | 1000 | c. c. |
| $\frac{1}{2}$ | $\frac{1}{2}$ | 1 | 1 | 1 | 1 | |
| \$1.30 | 2.00 | 2.25 | 2.75 | 3.75 | 4.50 | each. |

1950.—Leslie's, 100 c. c. in 10.

Each, \$2.25

1951.—Ditto, graduated, of glass, pouring lip and wooden foot.

| | | | |
|--------|------|------|-------|
| 250 | 500 | 1000 | gr. |
| 5 | 5 | | |
| \$1.25 | 1.50 | 2.00 | each. |

1952.—Ditto, French, of exactly even width inside, and carefully graduated, very useful where exact results are demanded.

| | | | |
|----|----|----|----------|
| 10 | 15 | 25 | grammes. |
|----|----|----|----------|

1953.—Ditto, of glass, with pouring lip.

| | | |
|-----|--------|---------|
| 500 | 1000 | grains. |
| .75 | \$1.00 | each. |

1954.—Cylinders, for electric machines.

| | | |
|----------|----------|------------|
| 10 to 12 | 13 to 15 | 18 in. |
| \$1.50 | 2.00 | 2.50 each. |

1955.—Cylinder, 100 fluid grains, graduated to 10 fluid grains stoppered. Each, \$1.50

1956.—Ditto, 500 grains in $\frac{1}{2}$ grains, stoppered, glass foot. “ 2.25

1957.—Ditto, 500 grs., without stopper, pouring lip, “ “ 1.50

1958.—Ditto, 1000 grains, “ “ “ “ 2.25

Carré's Ice Freezer. See Ice.

1959.—Day and Night Thermometer, of glass. 4.00

1960.—Davy's Safety Lamp, for coal miners, with key. 5.75

1961.—Decanting Jar, porcelain, with six tubulatures and two knobbed handles, for the washing of powders and their separation into different degrees of fineness, and for decanting liquids.

| | | | |
|--------|------|------|------------|
| 8 | 16 | 20 | 25 lbs. |
| \$4.00 | 6.00 | 7.50 | 9.00 each. |



1961

1962.—Decanting Jars, for Collodion.

1963.—Ditto, Syringes, glass. Each, .25 to \$1.00

1964.—Ditto, Tubes, 6in. long, $\frac{1}{8}$ in. bore, both ends smooth, for decanting small quantities of liquid at a time, so not to disturb the sediment. Ea., .05

Decimal Scales. See Centimetre Measures.

Decigallon Measure. See Metrical Equivalentents.

Decoction Strainers. See Emulsion Mortars.

Decomposition of Water Apparatus. See Water Decomposition.

1965.—Deflagrating Covers, of Tin.

Each, .10

1966.—Ditto, ditto, with spoon. “ .25

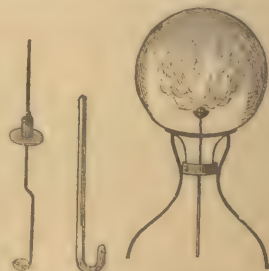
1967.—Ditto, ditto, and hook. “ .20

1968.—Ditto, ditto, of brass. “ .50

1969.—Ditto, ditto, with spoon. “ .75

1970.—Ditto, hooks. “ .05

1971.—Ditto, Globes, for burning phosphorous and oxygen gas.



1969 1970 1971, 1972, 1974

| | | |
|--------|------|------------|
| 9 | 12 | 15 in. |
| \$1.25 | 2.25 | 3.25 each. |

.Ditto, Jars. See Bell Jars.

1972.—Ditto, Stands, or tripods of Iron, to support the deflagrating globe when reversed. Each, \$1.00

1973.—Deflagrating Taper Holder, or socket. .40

1974.—Ditto, Cup, on metallic stand, with heavy iron foot, for holding phosphorous, to burn under an inverted globe containing oxygen gas. \$1.50

Dentists' Furnace. See Furnaces.

1975.—Dessicators, of glass, composed of a small glass jar, roughed on the top, and a flat ground glass cover. Each, \$1.00



1976.—Ditto, composed of two 16-ounce jars, nicely ground and cut glass, with their necks ground together, for drying substances in a confined atmosphere over sulphuric acid; also for cooling crucibles before weighing, flat, polished top. Each, \$2.50

1977.—Ditto, ditto, round top. " 2.00

1978.—Dessicating Apparatus, consisting of bell jar, resting on a flat glass slab, containing a porcelain acid dish and porcelain capsules, or watch glasses

| | |
|--------|------------|
| 6 | 8 in. |
| \$3.00 | 5.00 each. |

Ditto, Baths. See Drying Baths.

1979.—Dessicator, oblong, consisting of glass plate, tray, and oblong bell receiver, ground to fit exactly, to keep substances dry while weighing. \$2.00

1980.—Dessicators, Porter's. Each, 1.50

1981.—Ditto, Schrötter's, to insert into the tubulure of an open mouth bell jar, for cooling substances in dry atmospheric air at ordinary atmospheric pressure. \$1.50

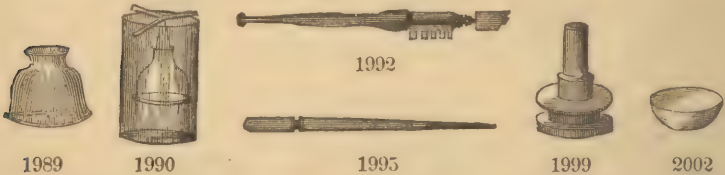
Dessicating Ovens. See Drying Ovens.

1982.—Ditto, Pans, three partitions, 5 inches diameter. Each, 1.25

1983.—Ditto, Pans, six partitions.

| | | |
|--------|------|--------------|
| 4½ | 5½ | 6½ in. diam. |
| \$1.15 | 1.30 | 1.50 each. |

- 1984.—**Dessicating Plates**, porcelain, perforated, 5 to 6 inches.
Each, .75
- 1985.—Ditto, ditto, earthen, perforated, 3 to 5 inches, for drying crystals, etc.
Each, .50
- 1986.—Ditto, ditto, porous, $3\frac{1}{2}$ to $5\frac{1}{2}$ inches.
“ .50
- 1987.—Ditto, **Apparatus**, Fresenius', complete. \$20.00
- 1988.—Ditto, ditto, Fresenius', for drying at 100 deg. Celsius, consisting of a copper water bath, drying tube, a flask to contain sulphuric acid, etc. \$7.50



- 1989.—**Dialyser**. Small, .50 Large, .75
- 1990.—Ditto, with jar fitted, extra. \$1.25
- Diamond Models.** See Crown Diamonds.
- Ditto, Jar.** See Electric Diamond Jar.
- 1991.—**Ditto, Sparks**, for burning in oxygen. Prices vary according to the size and quality required.
- 1992.—**Diamonds**, for glass cutting, whole set of keys, complete.
Each, \$5.00
- 1993.—Ditto, for writing on glass, with bone handle and silver ferule.
Each, \$3.00
- 1994.—Ditto, ditto, with ivory handle. “ 6.00
- 1995.—Ditto, ditto, with larger spark, size No. 1. “ 7.50
- 1996.—Ditto, ditto, with still, larger spark, size No. 2. “ 12.00
- 1997.—Ditto, ditto, with very long spark, fine ivory handle.
Each, \$20.00
- 1998.—**Diamond Mortars**, of steel, as used in blow-pipe analysis for crushing minerals. Plattner's usual form. Each, \$5.00
- 1999.—Ditto, ditto, with brass collar and screw to prevent any escape of the powder when choice specimens are being crushed.
Each, \$7.50
- 2000.—**Differential Thermometers**, Leslie's, with glass connections between each limb and stopcock in the center.
Each, \$4.00
- 2001.—Ditto, ditto, plain. \$2.50 to 3.50

Decomposition of Water by Galvanism. See Bunsen's Apparatus, under Apparatus.

2002.—**Digestors**, semi-Berlin, flat bottom, 2 in. diam'r. Each, .12



2003.—Ditto, Meissen. Each, .18

2004.—Ditto, Royal Berlin, with oval bottom, flaring top. Each, .50

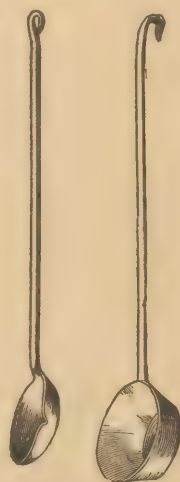
2005.—Ditto, Plattner's, flat bottom, flaring top.

| | | |
|-----|-----|-----------|
| 2 | 2½ | 4 in. |
| .25 | .30 | .50 each. |

Ditto. See also Evaporating Kettles.

2006.—**Dippers**, hammered copper, without seam, round, iron handle, 1 litre capacity.

Each, \$2.00



2007

2008

2007.—Ditto, iron, for pouring metals in assay.

| | |
|-------------|-----------------|
| Bowl, 3 in. | 5 in. diameter. |
| .40 | .50 each. |

2008.—Ditto, tinned, shallow, with long handles, for pouring.

| | | |
|-----|-----|-----------|
| 5 | 5½ | 6 in. |
| .60 | .70 | .80 each. |

Ditto, porcelain. See Casseroles.

2009.—**Dipping Needle**, small, with brass support. \$1.50

2010.—Ditto, ditto, larger. Each, \$2.25 to 5.00

2011.—**Dishes**, iron, countersunk, tinned, French, conical shape, with handles on either side, used for boiling sacharine matter, 5 in. deep and 10 in. diameter. Each, \$1.50

2012.—Ditto, earthen, deep, round, and flat bottom, for holding acids and acidulous solutions. Imported to order.

| | | |
|---------|-------|-------------|
| 10 | 15 | 20 gallons. |
| \$10.00 | 12.00 | 15.00 each. |

2013.—Ditto, porcelain, round, with lip, for receiving the ashes of the burning filter. Each, \$1.00

2014.—Ditto, ditto, smaller, without lip. " .75

2015.—Dishes, Draining, porcelain, to stand under bottles containing acids or other liquids.

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----------|
| 2 | 2½ | 2¾ | 3 | 3½ | 4 | 4½ | 5 in. |
| .08 | .10 | .12 | .15 | .18 | .20 | .22 | .25 each. |

2016.—Ditto, Roasting, of porous clay, sizes, 1½ in. to 10 inches.

Per doz., .75 to \$5.00

2017.—Displacement Apparatus, consisting of a funnel and bottle fitted by means of a cork.

| | |
|-----|-----------|
| 1 | 2 litres. |
| .60 | .75 each. |

2018.—Ditto, ditto, consisting of a separatory funnel fitting into a glass receiver by means of a tightly fitting cork.

| | | |
|--------|------|------------|
| pts. | qts. | ½ gall. |
| \$2.50 | 3.50 | 4.50 each. |



2019.—Ditto, ditto, with ground joint of light blown glass, without stopcock, 6 ounces. .75

2020.—Ditto, ditto, of glass, consisting of separatory funnel, fitting into a glass receiver with ground joint.

| | | |
|--------|------|------------|
| pts. | qts. | ½ gall. |
| \$4.00 | 5.00 | 6.00 each. |

2021.—Ditto, ditto, consisting of a separatory funnel, by a glass ground joint fitted into a separatory bottle, with a ground glass stopcock at foot.

| | | | |
|--------|------|---------|-------------|
| pts. | qts. | ½ gall. | 1 gall. |
| \$6.00 | 7.00 | 8.00 | 12.00 each. |

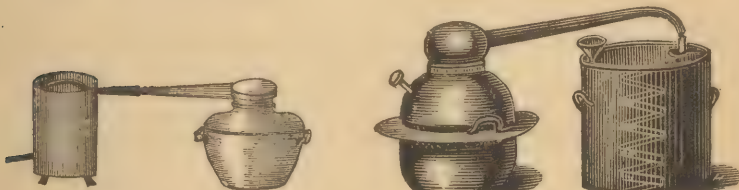
2022.—Displacement Apparatus, Guibourg's, consisting of an oblong glass vessel, stoppered, and with stopcock in the tube, fitted by a ground glass joint into a receiver having ground stopcock at foot; capacity of receiving vessel, 1½ gallons.

Each, \$12.00

2023.—Ditto, ditto, ditto, with a communicating tube between the displacer and the receiver.

Each, \$14.00

The joints of the foregoing apparatus are double ground with the finest emery.



2024

2026

2024.—Distilling Apparatus, for distilling water, spirits, oil, etc., consisting of a polished copper countersunk still, tinned inside, and a worm of block tin enclosed in a tub of zinc, having a receiving and discharging tube.

| | | | |
|---------|-------|-------|-------------|
| 1 | 2 | 3 | 5 galls. |
| \$12.00 | 16.00 | 20.00 | 30.00 each. |

2025.—Ditto, ditto, nickleized.

| | | | |
|---------|-------|-------|-------------|
| 1 | 2 | 3 | 5 galls. |
| \$14.00 | 19.00 | 25.00 | 35.00 each. |

2026.—Ditto, with water bath, having a tight fitting water joint and jacket, steam escape, water supply pipe, with thermometer, and extra handles.

| | | | | |
|---------|-------|-------|-------|-------------|
| 1 | 2 | 3 | 5 | 10 galls. |
| \$24.00 | 32.00 | 40.00 | 60.00 | 80.00 each. |

Ditto, ditto, Mürrle, for the use of pharmacutists and chemists, complete. See Mürrle's Apparatus, at the close of this volume.

2027.—Distilling Flasks, for fractional distillation.

Per doz., \$1.50

2028.—Ditto, Apparatus, of iron, with safety valve.

| | | |
|--------|------|------------|
| pts. | qts. | 1 gall. |
| \$3.75 | 4.50 | 6.00 each. |

Ditto, Retorts. See Retorts.



2027



2029



2031



2032



2033

2029.—Distilling Apparatus, Wurtz's, for fractional distillation, complete, with thermometer. \$10.00

2030.—Ditto, ditto, glass part only. 2.50

2031.—Döebereiner's Hydro Platinic Lamp, for generating hydrogen, and producing an instantaneous light by throwing a jet of the same upon a piece of spongy platinum; a very convenient lamp for smokers, etc., of German embossed glass.

\$2.50

2032.—Ditto, ditto, of German plain glass. 3.00

2033.—Ditto, ditto, French form, having a small lamp attached which is thrown before the light by the same movement by which the jet is projected; plain. \$7.00



2034



2035



2040



2041



2041A

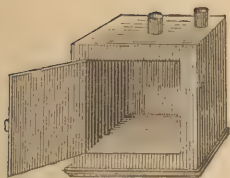
2034.—Ditto, ditto, vase shape. 10.00

2035.—Dome, porcelain, for Bunsen's lamp. 1.00

Douceleur Apparatus. See Apparatus. Drainers. See Crystal Drainers.

2036.—Drawing Tools, in a small box, containing dividers, pencils, etc. \$1.00 to 4.00

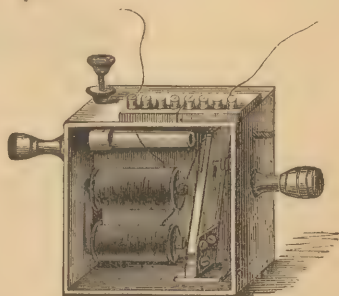
- 2037.—Drawing Curves. Each, .25
 2038.—Ditto, Protractors, horn. “ .75
 2039.—Dropping Glasses, Schuster’s, plain. “ .20
 2040.—Ditto, ditto, with ground stopper. “ .25
 Ditto, **Bottles.** See Acid Bottles.
 2041.—Ditto, **Pipette**, with bulb top, covered with rubber film, graduated 100 c. c. .75
 2041_A.—Ditto, **Pipettes.** See Pipettes.
 2042.—Ditto, **Tube**, plain, 4 to 10 inches. Each, .10 to 25
 Drying Apparatus. See Dessicating Apparatus.
 2043.—**Drummond Lamp**, new French form, for petroleum. \$15.00



2044



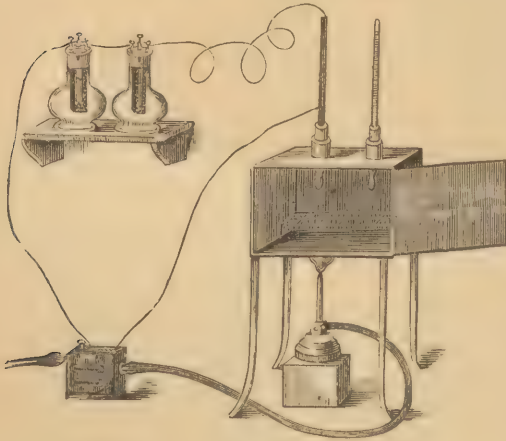
2052



2054

- 2044.—**Drying Baths**, copper, 10 inch, with double walls and two tubulatures, one for thermometer and the other for escape, including thermometer. Each, \$15.00
 2045.—Ditto, ditto, soft, soldered.
 8 10 12 inches.
 \$9.00 13.50 18.00 each.
 2046.—Ditto, ditto, 8 in. with thermometer. “ 10.00
 2047.—Ditto, ditto, 10 inch. “ 15.00
 2048.—Ditto, 12 inch. “ 19.00
 2049.—Ditto, ditto, nickleized. Each size additional. 2.00
 2050.—Ditto, ditto, of tin. Each, 2.50
 2051.—Ditto, ditto, porcelain, for drying filters over hot water. Each, \$1.00
 2052.—**Drying Bath Regulator**, Kemp’s, improved. “ 3.00
 2053.—Ditto, ditto, with Bunsen’s late improvement, consisting of an additional spring to steady the pressure of the mercury. Each, \$3.50

- 2054.—**Drying Bath Electrical Regulator**, for keeping the heat of the water bath constantly at an even temperature.
- 2055.—**Ditto, Bottles**, Barker's, small size. Each, \$1.00
- 2056.—**Ditto, ditto**, large size. " 1.50
- 2057.—**Ditto, Oven**, or hot air bath, having single walls and detached perforated shelf on legs, 8 inches. \$7.00



2058



2059



2060

- 2058.—**Ditto, ditto**, with thermometer. \$8.50
- 2059.—**Ditto, ditto**, Rammelsberg's conical shape, of copper, hard soldered, having detached shelf.
- Small size, \$3.00
- larger size, 4.00 each.
- 2060.—**Ditto, Plates**, porous clay. Each, .50



2061

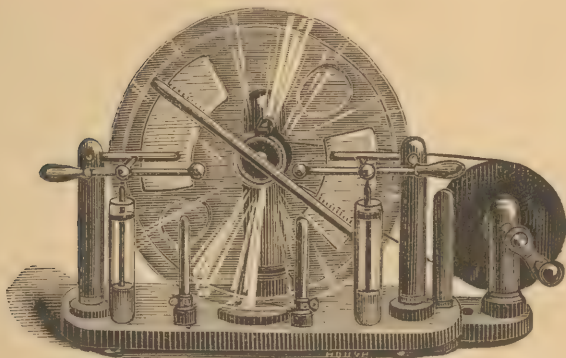


2062

- 2061.—**Ditto, Tubes**, Liebig's. Each, .50
- 2062.—**Ditto, ditto**, Mitscherlich's. " .60
- 2063.—**Druggist Mill**, for grinding roots, herbs, etc. \$15.00
- 2064.—**Dutch Metal**. Per book, .10
- 2065.—**Dyers' Cloth**, for mordanting. Per yard, \$2.00

Dye Pots. See Deep Casseroles.

Earthen Dishes, perforated. See Dishes, Dessicating Apparatus.



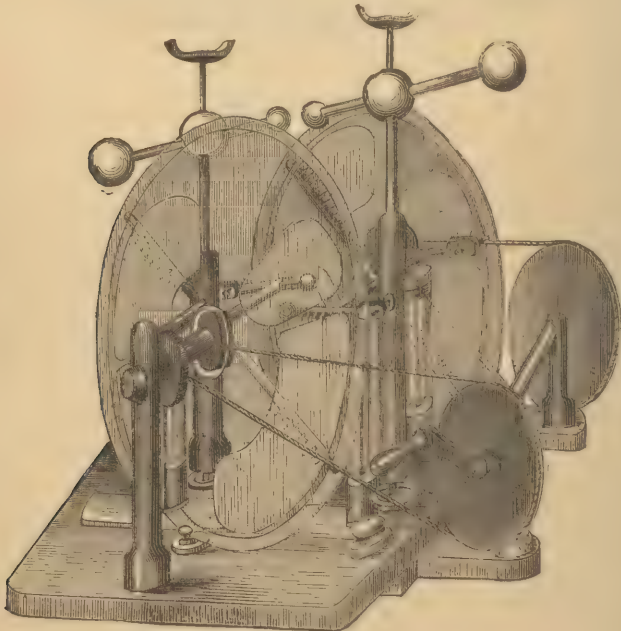
2066

ELECTRICAL AND GALVANIC APPARATUS.

HOLTZ'S *wonderful Induction Electrical Machine as improved by BORCHARD*, and first brought into the United States for sale, by myself, in 1869. It is the most wonderful discovery, in regard to the length of the spark yet known—a spark 6 in. long having been obtained from a 12 in. plate machine, and glass perforated $1\frac{2}{3}$ in. thick. The remarkable machine, imported by myself, now in the possession of Prof. Blake, of Brown's University, has a 30 in. plate, and has produced a spark about 16 in. It was the result of the combined intelligence of Messrs. Holtz, Poggendorf, Rienz, and Dove; was manufactured expressly for me by Mr. Borchard, and is believed to be the best single machine of the kind in the world for practical purposes. It must be borne in mind that the machines I import are *all made for me by the inventor*, and the secret of the long spark has never yet been discovered by the greatest savans in Europe, and I presume that it will not be questioned but that those made by the inventor HIMSELF must inevitably be far superior to any imitations or copies; nevertheless, should my customers desire them, I am prepared to furnish imitations of this celebrated machine as low as any house in America. It should be borne in mind that these machines, with the extra appurtenances, can illuminate large Geissler tubes, pierce thick glass, show rotation by electricity, manufacture Ozone, etc. They are light and portable, and easily excited by the use of a sheet of hardened vulcanized rubber and a cat skin, and when once excited, are well known to retain their electricity from four to five hours. The new and

ingenious collecting and condensing apparatus, invented by C. Van Brunt, Esq., of this country, consisting of a multiplication of the points for the collection of electricity, and a tin foil condenser, as described in the journal of Franklin Institute, may be attached to this machine at my establishment.

| | | | | |
|--------|------------------|------------------|---------------|----------|
| 2066.— | Single machines, | Borchard's make, | 30 in. plate. | \$225.00 |
| 2067.— | “ | “ | “ 24 in. “ | 175.00 |
| 2068.— | “ | “ | “ 20 in. “ | 140.00 |
| 2069.— | “ | “ | “ 18 in. “ | 100.00 |
| 2070.— | “ | “ | “ 14 in. “ | 65.00 |



2071

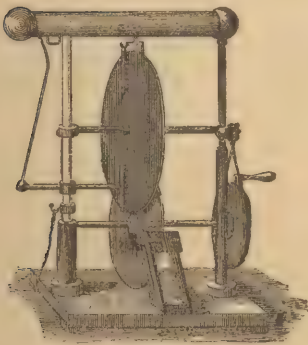
2071.—Double machines, Borchard's make.

2072.—**Dielectric Machine**, as constructed by M. Carré, having revolving wheels of hardened rubber, the electricity being supplied by friction on stationery rubbers located in front, so that electricity may be generated in every kind of weather. This machine is the most simple and powerful of the static conduction machines; being scarcely affected by atmospheric moisture, it becomes charged in a few seconds, and sustains its action indefinitely. With induction plates from 44 to 60

Electricity.—*Continued.*

centimetres, it gives a constant flow of sparks from 12 to 28 centimetres; it illuminates brilliantly Geisler tubes of over a yard connection; it pierces glass from 8 to 12 millimetres thick; in less than a minute the medium size machine will charge to overflowing a battery of 12 large jars, etc. It also performs the usual experiments of large coils, etc.

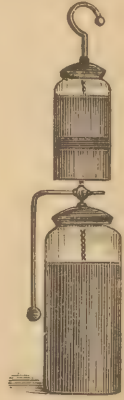
The price of a small machine giving from 30 to 40 millimetre sparks, is \$30.00



2072



2080



2087

- | | |
|--|----------|
| 2073. —Dielectric Machine, No. 1, plates 32 to 44 millimetres. | \$125.00 |
| 2074. —Ditto, No. 3, “ 44 to 60 “ | 200.00 |
| 2075. —Plate Electric Machine, with prime conductor of brass, and supported by pillars of glass, plate 24 in. diameter. | \$65.00 |
| 2076. —Ditto, 20 inches. | 45.00 |
| 2077. —Ditto, 16 “ | 35.00 |
| 2078. —Ditto, 12 “ with japanned prime conductor. | 25.00 |
| 2079. —Electrophorus. | 9.00 |
| 2080. —Pith Ball Electrometer. | 1.00 |
| 2081. —Gold Leaf “ | 6.00 |
| 2082. —Head of Hair. | 1.50 |
| 2083. —Leyden Jar, pint. | 1.50 |
| 2084. —Ditto, ditto, quart. | 2.00 |
| 2085. —Ditto, ditto, $\frac{1}{2}$ gallon. | 2.75 |
| 2086. —Ditto, ditto, 1 gallon. | 3.25 |
| 2087. —Set of Leyden Jars. | 6.50 |

Electricity.—*Continued.*

2088.—Electrical Batteries, in walnut boxes.

| | | |
|---------|-------|--------------|
| 4 | 6 | 12 qt. jars. |
| \$11.00 | 16.00 | 28.00 each. |

(Other sizes in proportion.)



2088



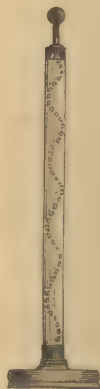
2089



2090



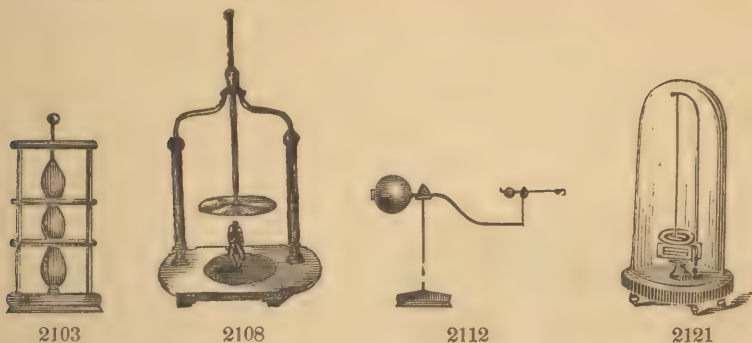
2099



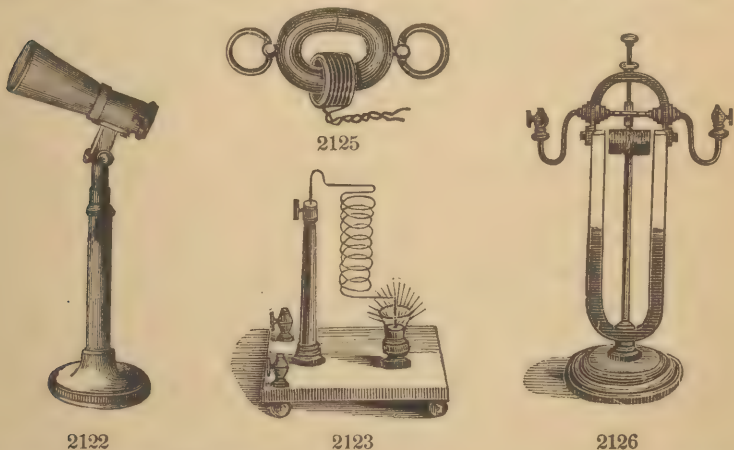
2101

- | | |
|---|----------------|
| 2089.—Diamond Jars, 2 quarts. | Each, \$4.00 |
| 2090.—Plain Discharger, glass handle. | 2.25 |
| 2091.—Jointed Discharger. | 5.00 |
| 2092.—Universal Discharger. | 10.00 |
| 2093.—Electrometer Jar, quart. | 2.50 |
| 2094.—Leyden Jar, with movable coatings. | 3.50 |
| 2095.—Ditto, ditto, with bells, | 6.00 |
| 2096.—Electrical Bells, 2 bells. | 2.00 |
| 2097.—Ditto, ditto, 3 bells. | 3.00 |
| 2098.—Hiero's Fountain. | 18.00 |
| 2099.—Electrical Flier. | 1.25 |
| 2100.—Insulating Stool. | 5.00 |
| 2101.—Spotted Tube. | \$3.00 to 5.00 |
| 2102.—Luminous Plate. | 2.00 to 2.50 |
| 2103.—Illuminating Egg Stand. | 2.00 |
| 2104.—Amalgam. | Per box, .40 |
| 2105.—Biot's Hemisphere, for showing electricity resides only on the surface. | \$8.00 |
| 2106.—Metallic Plates, for dancing figures to suspend. | 1.25 |
| 2107.—Ditto, ditto, on insulated stand. | 6.50 |
| 2108.—Ditto, ditto, larger, with double columns. | 12.00 |
| 2109.—Thunder Houses, mahogany. | 8.00 |
| 2110.—Gas Pistol. | 1.25 |
| 2111.—Dancing Images, per pair, | 1.00 |

Electricity.—Continued.



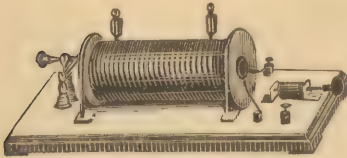
| | | | |
|---|------|------|------------------|
| 2103 | 2108 | 2112 | 2121 |
| 2112.—Electrical Orrery. | | | \$4.50 |
| 2113.—Pith Balls, per dozen, | | | .25 |
| 2114.—Electrical Sportsman, Jar and Bird. | | | 6.00 |
| 2115.—Ditto, Pistol. | | | 2.50 |
| 2116.—Miser's Plate. | | | 2.50 |
| 2117.—Rod of Glass, for illustrating vitreous excitation. | | | 1.00 |
| 2118.—Ditto, Shellac, for ditto, ditto. | | | 2.00 |
| 2119.—Galvanometer, Astatic. | | | 15.00 |
| 2120.—Ditto, Tangent. | | | 10.00 |
| 2121.—Ditto, Sensitive. | | | \$35.00 to 60.00 |



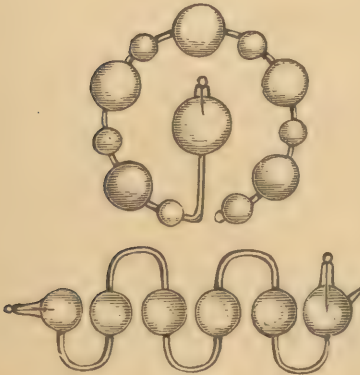
| | | | |
|---|--|--|---------|
| 2122.—Thermo Electric Pile. | | | \$35.00 |
| 2123.—Contracting Helix. | | | 5.50 |
| 2124.—Helix on Stand, 3 poles. | | | 4.50 |
| 2125.—Ditto, with ring armature, or magic circle. | | | 6.00 |

Electricity.—*Continued.*

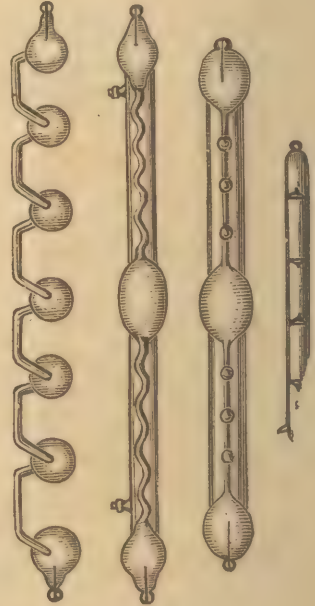
- 2126.—Page's Revolving Electro Magnet. \$8.00
- 2127.—Model of Telegraph, with spool and signal key. 8.00
- 2128.—Telegraph Clock-work. 45.00
- 2129.—Induction, or Ruhmkorff's Coils, capable of throwing a very small spark. \$7.50



2133



2140

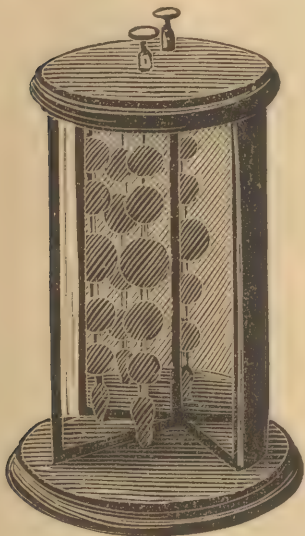


2140

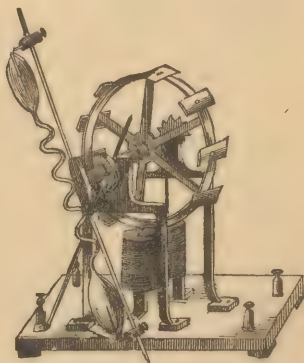
- 2130.—Ditto, ditto, ditto, $\frac{1}{8}$ in. spark. \$12.00
- 2131.—Ditto, ditto, ditto, $\frac{1}{4}$ in. " 15.00
- 2132.—Ditto, ditto, ditto, $\frac{1}{2}$ in. " 30.00
- 2133.—Ditto, ditto, ditto, 1 in., with contact breaker. 60.00
- 2134.—Ditto, ditto, ditto, 2 in. " " 100.00
- 2135.—Ditto, ditto, ditto, 4 in. " " 200.00
- 2136.—Ditto, ditto, ditto, 6 in. " " 300.00
- 2137.—Ditto, ditto, ditto, 9 in. " " 400.00
- 2138.—Ditto, ditto, ditto, 12 in. " " 500.00
- 2139.—Current Changers. Each, \$3.50 to 10.00
- 2140.—Geissler's Tubes, plain, each tube marked with the name of the gas it contains. Prices, from \$1.25 to 30.00
- 2141.—Ditto, ditto, for use with the spectroscope. Each, 3.00

Electricity.—*Continued.*

- 2142.—Ditto, Vacuum Tubes, in which the vacuum is so perfect that the current will not pass. Each, \$6.00
- 2143.—Ditto, tubes in form of a rose. \$6.00 to 18.00
- 2144.—Ditto, ditto, form of a lyre. Each, 7.00
- 2145.—Ditto, ditto, form of a star. “ 5.00
- 2146.—Ditto, ditto, form of a U, very brilliant. “ 9.00
- 2147.—Ditto, ditto, form of a Marguerite. “ 5.50



2150

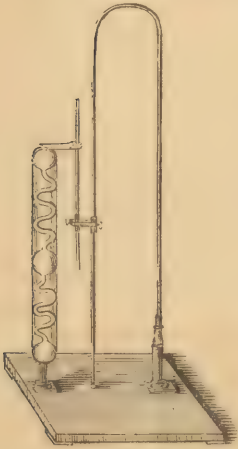


2150A

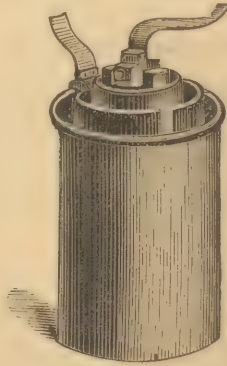
- 2148.—Geissler's Tubes, form of a cross. \$5.00 to 7.50
Various other forms; single and double spirals, conical and flat spirals, filled and empty. These tubes were selected by myself in my late trip to Europe, and are of the very best make, and brilliant color.
- 2149.—Geissler's Tube, filled with mercury, showing the effect of phosphorescent light by friction. \$5.00
- 2150.—Geissler's Tubes, Reflectors, showing small tubes, and multiplying the number by reflection. Each, \$5.00
- 2150A.—Geissler's Tube Revolving Apparatus, for revolving Geissler's Tubes, by the use of Electricity. The magnets cause the motion to be uniform and regular. Price, \$20.00
- 2151.—Geissler's Tube Supports, of brass, on mahogany base, with shifting clamps to hold different size tubes. Each, \$10.00

Electric Batteries.

Salts of Mercury for Batteries. See Chemicals.



2151

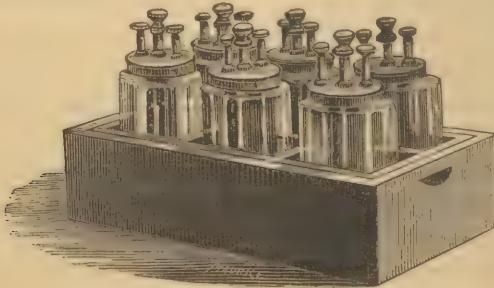


2152



2162

- 2152.**—Bunsen's large Cells, with rolled zinc plates $\frac{1}{4}$ in. thick and French sawed carbons, jars 8 in. high. Each, \$5.00
- 2153.**—Ditto, ditto, ditto, jars 6 " " 3.50
- 2154.**—Ditto, ditto, ditto, jars 5 " " 3.00
- 2155.**—Daniel's Batteries. " 2.50
- 2156.**—Grove's ditto. " 2.50
- 2157.**—Smee's ditto. " 2.50

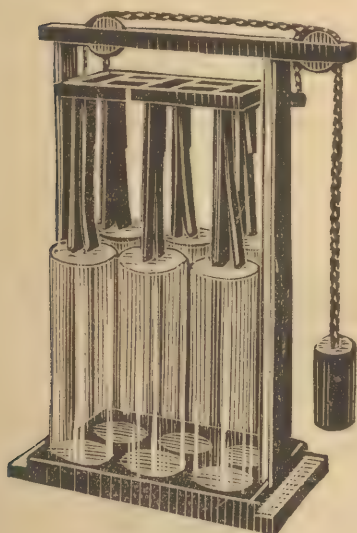


2161

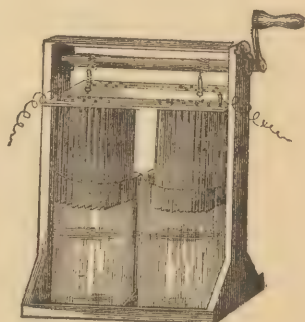
- 2158.**—Leclanche's Constant Battery, consisting of a rod of carbon placed in a porous pot, which is then packed tightly with a mixture of peroxide of manganese and coal, outside of which is a glass jar, in a corner of which is placed a rod of zinc. The exciting liquid is a solution of sal ammoniac. This battery is now the most popular one of its kind in both Germany and France.

Electricity.—*Continued.*

- 2159.—American Bichromate Battery, improved pattern, quart cells. \$7.00
 2160.—Ditto, ditto, pint cells. 5.00



2163



2164

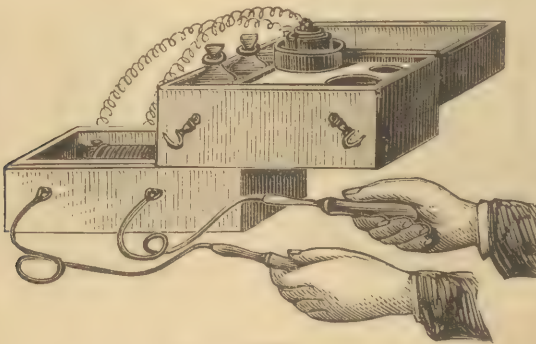
- 2161.—Six cells of the larger battery, with connections complete, arranged in black walnut box, with partitions and handles, convenient for removing on and off the lecture table. \$40.00

The foregoing arrangement of batteries is the most convenient, cleanly, and available form in use. It is arranged for the employment of one solution, which can be kept readily prepared at hand in a tight, ground stoppered bottle. When the battery is not in use, the zinc may be raised above the solution in the jar (which should be only half-filled with the same); and when the operator desires to renew the contact, the zinc is simply plunged into the fluid by pressing down the sliding rod. The top of the battery being always closed by a tight-fitting brass cap, no offensive fumes can escape to influence chemicals or the atmosphere in the vicinity. The operator will readily perceive that one cell can be employed alone, or any number to the extent of six. The seasonable employment of the sliding rod obviates any danger of shocks in connecting or disconnect-

Electricity.—*Continued.*

ing apparatus with the battery; the power of this battery combined is about equal to that of ten Bunsen's large cells, and the carbon and zincs can be connected or alternated at pleasure.

- 2162.**—French form, ditto, large size, holding about 2 litres. \$10.00
- 2163.**—Bunsen's Dipping Battery, consisting of 6 cells, zincs and carbons of which are raised and lowered by pulleys. \$40.00
- 2164.**—Ditto, ditto, consisting of two large 3-gallon cells, each cell having five zincs and carbons alternated, the whole raised and lowered by windlass crank. \$50.00
- 2165.**—Ditto, ditto, three large cells. 65.00



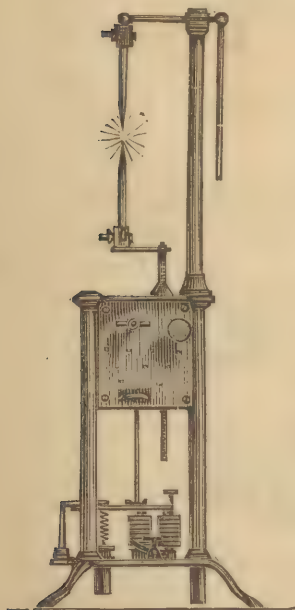
2166

- 2166.**—Ditto, Medico-Electric, for use of Physicians and paralytic persons. \$12.00
- 2167.**—Electro-Thermal Battery, of bismuth and antimony, oblong shape, with jointed support. \$30.00
- 2168.**—**Electrical Lamps**, Duboscq's, with clock-work and reflectors, complete.
- 2169.**—Ditto, ditto, Serrin's, French, with clock-work, complete, large size. \$450.00
- 2170.**—Ditto, Browning's, with automatic regulator, and movement to adjust the height of the carbon-poles while burning, very useful in showing spectra in screen experiments. \$30.00
- 2171.**—Ditto, regulated by hand, with reflector. 15.00
- 2172.**—Ditto, enclosed in a dark chamber, with reflector. \$20.00
- 2173.**—**Electrical Apparatus**, with clock-work, for changing the current from one battery to another, without disconnecting. \$50.00

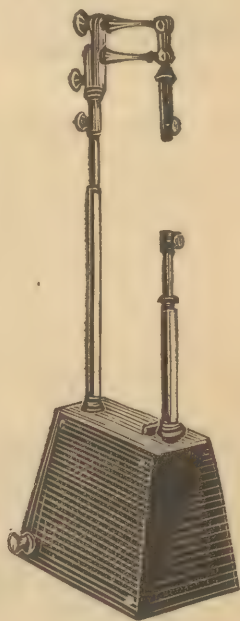
Electricity.—*Continued.*

- 2174.**—**Electrometer**, Thompson's, with scale and screen, as improved by Kirchoff. \$75.00

This new and unique form of Electrometer is deserving of attention, on account of its extreme delicacy and facility of indication of very small amounts of electricity, which can also be quantitatively measured. Prof. Kirchoff has added a valuable and interesting photometric attachment, rendering it a very easily read, and most complete instrument. It is certainly a great step in advance in the quantitative estimation of electricity, and is receiving great attention from the Physicists of the old world. (See illustration on next page.)

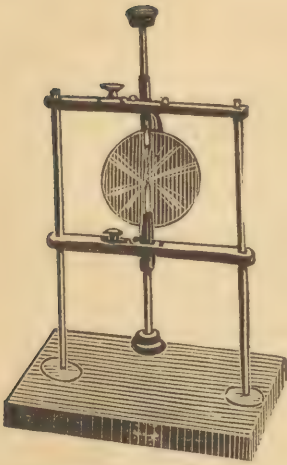


2168



2169

- 2175.**—**Elutriating Apparatus**, Schultze's, for the mechanical analysis of soils, clays, ground ores, etc. Each, \$5.00
- 2176.**—*Ditto*, Noebel's Apparatus, for washing soils in analysis. Each, \$4.50
- 2177.**—*Ditto*, ditto, with support. " 5.50
- 2178.**—*Ditto*. See Decanting Jars.



2171



2174



2175

- 2179.—Enamels, French, for enameling jewelry. For gold enamel, white. Per oz. \$1.00
 2180.—Ditto, ditto, black. " 1.25
 2181.—Ditto, for enameling gold—transparent blue, green, cerulean blue, lapis lazuli, opaque green, and transparent yellow. Per oz. \$1.50



2176

- 2182.—Ditto, ditto, turquoise. Per oz. \$3.00
 2183.—Ditto, ditto, transparent red. " 7.50
 2184.—Ditto, ditto, for enameling copper; deep red, blue, lapis lazuli, turquoise, dark green, transparent violet. Per oz. .25
 2185.—Ditto, ditto, for ditto; black, transparent green, clear yellow, deep yellow. Per oz. .50

- 2186.—Enamellers' Files, of hardened steel, for cutting round glass tubes. Each, \$1.50
 2187.—Ditto, Knife, cocoa handle. .50
 2188.—Ditto, Plates, of refractory clay.

| | | | |
|----------------|----------------|----------------|--------------------|
| $4\frac{3}{8}$ | $4\frac{3}{4}$ | $5\frac{1}{8}$ | $5\frac{1}{2}$ in. |
| .15 | .18 | .20 | .25 each. |



- 2189.—Endosmosis, apparatus for diffusion of gases, without stand and bell-glass. \$1.50
 2190.—Eolipile, or Ether Jet, glass apparatus, for showing combustibility of the vapor of ether. .50
 2191.—Ditto, Lamp, or Spirit Blast blow-pipe of brass, with vertical jet. Each, \$2.00
 2192.—Ditto, ditto, of tin. " 1.00

Eprouvettes. See Test Glasses, and Specimen Tubes.

Erdmann's Float. See Burette Swimmers.

- 2193.—Ether Distilling Apparatus, consisting of a glass retort, receiver, alcohol reservoir, etc., capacity of retort,

| | | | |
|--------|--------|---------|-------------|
| 1 qt. | 2 qts. | 1 gall. | 2 galls. |
| \$3.85 | 5.50 | 7.15 | 10.00 each. |

Ether Bottles. See Bottles.

- 2194.—Ditto, Extraction Apparatus, Bohemian, capacity of receiver, $\frac{1}{2}$ gallons. Each, \$14.00
 2195.—Ditto, ditto. See also Displacement Apparatus.
 2196.—Eudiometer, Bunsen's, 500 millimeters in $\frac{1}{2}$. \$3.50



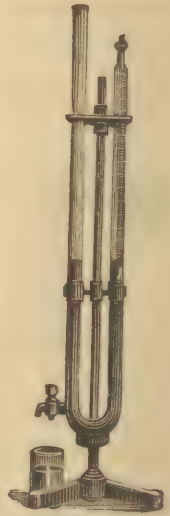
2196



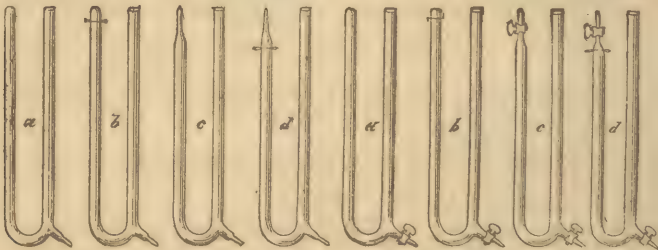
2197



2204



2198



2199

2200

2201

2202

- 2197.—Endiometer, Hoffman's, V shape, mounted. \$7.00
- 2198.—Ditto, **Large Lecture**, Hoffman's, mounted on stand. 15.00
- 2199.—Ditto, Hoffman's, with two parallel limbs, one sealed and one open. \$2.00
- 2200.—Ditto, ditto, with parallel limbs, one sealed, and one drawn at the top. \$2.50
- 2201.—Ditto, ditto, with two parallel limbs and one stopcock at the bottom. \$3.50
- 2202.—Ditto, ditto, with two parallel limbs and one stopcock at the top, and one at bottom. \$4.00
- 2203.—Ditto, Ure's, straight, 200 c. c. in $\frac{1}{2}$. 2.00
- 2204.—Ditto, ditto, U form, 60 c. c. in $\frac{1}{2}$. 3.50

Evaporating Dishes, of glass, straight sides and flat bottoms. See Crystallizing Dishes.

2205.—Ditto, Bohemian glass, round bottom, nests of 4. \$1.25



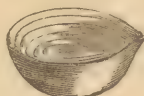
2206



2208



2210



2213



2216

2206.—Ditto, ditto, ditto, lipped, in nests of 6. 1.50

2207.—Ditto, ditto, of iron, glazed inside and out, with lip, deep and hemispherical.

| | | |
|--------|------|------------|
| 5 | 6 | 7 in. |
| \$1.25 | 1.35 | 1.75 each. |

2208.—Ditto, of platinum.

| | | |
|---|----|-------|
| 2 | 2½ | 3 in. |
|---|----|-------|

According to quantity, per gramme, .35 to .40

2209.—Ditto, silver.

| | | | |
|---|----|-------|-----------------|
| 2 | 2½ | 3 in. | Per oz., \$4.50 |
|---|----|-------|-----------------|

2210.—Ditto, of Royal Berlin porcelain, with spout glazed inside and out, except the bottom.

| | | | | | | | | | |
|-------|--------|--------|------|------------|-----|-----|-----|-----|-----|
| Nos. | 00 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Diam. | 1½ oz. | 2 | 3 | 4 | 6 | 8 | 10 | 14 | 24 |
| | .18 | .22 | .28 | .35 | .40 | .45 | .62 | .75 | .95 |
| | 8 | 9 | 10 | 11 | | | | | |
| | 45 oz. | 2 qts. | 3½ | 6 | | | | | |
| | \$1.30 | 2.00 | 3.00 | 3.85 each. | | | | | |

2211.—Ditto, ditto, nests of 7, from 00 to 5. \$2.25

2212.—Ditto, ditto, nests of 6 to 11. 11.00

2213.—Ditto, ditto, Royal Berlin, without lip, 3 inches diameter. Each, .20

2214.—Ditto, of glazed, Royal Saxon, without lip.

| | |
|-------|-----------|
| 2 in. | 3 in. |
| .15 | .35 each. |

2215.—Ditto, ditto, with lip glazed, inside and out.

| | | | | | | | | |
|------|--------|------|------|------|------|------|------|-------------|
| Nos. | 5 | 4 | 3 | 2 | 1 | 0 | 00 | 000 |
| | \$1.10 | 1.40 | 1.75 | 2.00 | 2.75 | 4.00 | 6.00 | 10.00 each. |

2216.—Ditto, ditto, Royal Berlin, porcelain, shallow form and flat bottom, stout, glazed throughout, except the bottom, with spout.

| | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|-----------|
| Nos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | 1 | 1½ | 3 | 4½ | 7 | 10 | 16 oz. |
| | .22 | .30 | .35 | .42 | .50 | .66 | .83 each. |

2217.—Ditto, full nests of the above. \$2.75

2218.—**Evaporating Dishes**, French, hemispherical, glazed throughout, except the bottom, of very thin white porcelain.

| | | | | | |
|-----|-----|-----|-----|-----|-----------|
| 40 | 55 | 70 | 84 | 97 | 110 m.m. |
| .25 | .30 | .40 | .50 | .60 | .75 each. |

2219.—Full sets of the above. \$2.50

2220.—Ditto, thin semi-porcelain, watch-glass form, with spout, glazed inside.

| | | | | | |
|--------|-----|-----|-----|-----|-----------|
| Nos. 1 | 2 | 3 | 4 | 5 | 6 |
| .15 | .18 | .20 | .25 | .30 | .40 each. |

2221.—Full nests of above. \$1.00

2222.—Ditto, ditto, deep hemispherical.

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-----|-----------|
| Nos. 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1½ | 2 | 3 | 4 | 6 | 8 | 10 | 14 | 16 oz. |
| .15 | .20 | .25 | .30 | .35 | .45 | .50 | .55 | .70 each. |

2223.—Sets of 6 of the above. \$1.25

2224.—Ditto, 9 “ 2.75



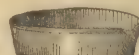
2218



2225



2226



2227

2225.—Ditto, ditto, watch-glass form, stouter, glazed inside. An excellent dish for quick evaporation.

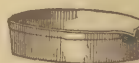
| | | | | | | | | | | |
|--------|-----|-----|-----|-----|--------|------|------|------|------|----------|
| Nos. 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Cap'y | | | | | | | | | | |
| .45 | .55 | .65 | .75 | .85 | \$1.00 | 1.30 | 1.75 | 2.10 | 3.50 | 5.00 ea. |

2226.—Ditto, ditto, Thuringian semi-porcelain, lipped, and heavy rim around the top.

| | | | | | | | | |
|--------|-------|--------|------|------|---------|------|------|------------|
| Nos. 8 | 9 | 10 | 11 | 12 | 13 | 15 | 16 | 18 |
| 24 oz. | 1 qt. | 1½ | 2 | 3 | 1 gall. | 2 | 3 | 5 |
| .75 | .85 | \$1.00 | 1.20 | 1.75 | 2.10 | 3.50 | 5.00 | 9.00 each. |

2227.—Ditto, semi-porcelain, flat bottom, round lip, and glazed inside and out, except the bottom.

| | | |
|--------|------|------------|
| Nos. 4 | 3 | 1 |
| \$1.00 | 1.25 | 2.00 each. |



2228.—Ditto, with rim around the top, sharp lip.

| | | | |
|--------|------|------------|------|
| 11 | 11½ | 12½ in. | 2228 |
| \$1.50 | 1.75 | 2.25 each. | |

Ditto, ditto. See also Capsules.

2229.—Ditto, or gold washing pans, 30 inch diameter, of Russian iron, countersunk. Each, \$1.00

2230.—Ditto, ditto, or trays of lead, small. “ .50

2231.—Evaporating Kettles.

2
\$3.50

5 gallons.
8.50 each.

Exsiccators. See Dessicators.



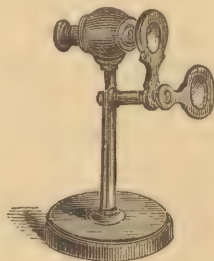
2232



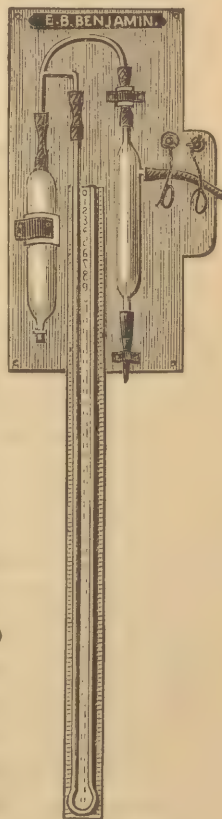
2240



2233



2234



2243

2232.—Eye Baths, of glass. Each, .25

2233.—Evolution Flask, funnel and delivery tube (without delivery flask). \$1.25

2234.—Eye Models, for showing the reflection on the eye lenses, with the use of spectacles. Each, \$15.00

Faraday's Retorts. See Retorts.

2235.—Files, enamellers', for cutting glass. Each, 1.00

2236.—Ditto, round, half round and flat.

| | | | |
|-----|-----|-----|-----------|
| 4 | 5 | 6 | 7 in. |
| .20 | .25 | .35 | .40 each. |

2237.—Ditto, triangular.

| | | | | |
|-----|-----|-----|-----|-----------|
| 3 | 4 | 5 | 6 | 8 in. |
| .18 | .25 | .30 | .40 | .50 each. |

2238.—File Handles. Each, .10

2239.—Filtering Apparatus, porcelain. \$8.00

2240.—Ditto, ditto, Plantamour's, tin bath for hot water. \$2.50

2241.—Ditto, ditto, of copper, with porous strainer \$1.25

2242.—Ditto, ditto, Beale's quick 75

2243.—Ditto, ditto, for rapid filtration, by Prof. Bunsen's method, under atmospheric pressure. \$11.00

The foregoing apparatus has come into extensive use both in Europe and in this country: filters precipitates, etc., which, with the old method, would take, in many familiar instances, four to ten hours to filter properly, in a tenth of the time taken by the old method. Alluminous, Sillicious, and ordinary sulphide of hydrogen precipitations, are quickly filtered from. So convenient and useful has it become, and so generally recognized by the profession, that it is considered almost an indispensable requisite of every laboratory. The illustration shows the arrangement of this pump; full description of the method of employment of this apparatus, and several of its excellencies may be found in Johnson's latest edition of Fresenius's Quantitative Chemical Analysis, from which I extract the following observations, and I have recently introduced an improvement in the working of this apparatus, by which the filtrate may be received directly into a beaker, for the suggestion of which I am indebted to Dr. Gibbs, of Harvard College.

"This apparatus is screwed down on a board fastened to the wall, in such a manner that each separate piece of the apparatus is held by a single fastening only, in order to prevent the tubes from being strained or broken by the possible warping of the board. On opening the first pincheock, the water flows down the discharge to a depth of thirty feet, carrying with it the air which it sucks through the upper tube. The second pincheock is used to regulate the flow of the steam, when the first one is completely open. The discharge pipe should have a fall of about thirty feet, and be of a diameter of half-an-inch, and end in a sewer or some other arrangement, to convey the water away. The filtration is made in the following manner. The receiver standing in a metallic vessel is connected by a small glass or rubber tube, with the discharging tube on left of the illustration (having previously been fitted with filter). At first, the delivery is gradual, but in a moment or two the filtrate runs through in a continuous stream, often so rapidly that one must hasten to keep up the supply of liquid.

"The Platinum Cone is placed in the bottom of the glass funnel, the dry paper filter then introduced in the ordinary manner, moistened, and freed from all adhering air bubbles by pressure with the finger. A filter so arranged, and in perfect contact with the glass when filled with a liquid, will support the pressure of an entire atmosphere without the least danger of breaking, and the interspace between the folds of the platinum foil is perfectly sufficient to allow of the passage of a continuous stream of water."

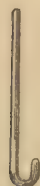
2244.—Filtering Apparatus, Bell Glasses, with tubulature at foot, for above. See Bell Glasses.

For other appurtenances of Bunsen's quick filtering apparatus, see their appropriate heads in this Catalogue.

2245.—Filter, calico, a very strong and durable filter, conical, with folds. \$2.50

- 2246.—**Filter Dryer**, of porcelain. \$1.00
 2247.—**Filter Holders**, japanned. Each, 3.00
 2248.—**Filter Hooks**, of glass, to hang between the funnel and filter. Per doz. .50 to .75
 2249.—**Filtering Rings**, of unannealed wire. “ .60
 2250.—Ditto, ditto, porcelain, to attach to an upright stand, single arm. Each, .50
 2251.—Ditto, ditto, ditto, with three arms, to place over a glass vessel when filtering into it. Each, .35
 2252.—**Filtering Flasks**, extra stout, to bear pressure. “ .50
Filter Covers. See Covers.
Filter Stands. See Funnel Supports.
 2253.—**Filters**, felt, conical shape, for filtering wines, etc.

| | | |
|--------|------|------|
| Nos. 8 | 12 | 16 |
| \$1.00 | 2.00 | 3.00 |



2248



2251



2253

- 2254.—Ditto, French, cut in a circular form, packs of 100 each, grey, *genuine* Prat-Dumas.

| | | | | |
|----------------|---------|--------|--------|----------------|
| Nos. 25 | 33 | 40 | 45 | 50 |
| 7½ | 10 | 13 | 15 | 17½ in. |
| .40 | .55 | .75 | \$1.00 | 1.25 per pack. |
| Per 12 sheets, | Nos. 80 | 100 | | |
| | 26 | 38 in. | | |
| | .75 | \$1.00 | | |

- 2255.—Ditto, ditto, white, in packs of 100.

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|----------------|
| 2 | 3 | 4 | 5 | 6 | 7½ | 15 | 16½ in. |
| .15 | .20 | .25 | .35 | .45 | .55 | \$1.25 | 1.50 per pack. |

- 2256.—**Filtering Paper**, white, French, 15x18. Per ream, \$4.50

- 2257.—Ditto, ditto, Berzelius's, similar to Swedish, but firmer.

Per quire, .75

- 2258.—Ditto, ditto, Chardin, exceedingly stout and heavy, for making filtering pulp. Per sheet, .20, per ream, \$30.00

- 2259.—Ditto, ditto, best German laid paper, extra heavy, 19x22.

Per quire, 65, per ream, \$9.00

PER QUIRE, PER REAM.

- 2260.—**Filtering Paper**, letter A, laid, 19x22, .60, \$7.00
 2261.—Ditto, ditto, “ B, wove, 18x21, .50, 6.50
 2262.—Ditto, ditto, “ C, laid, 15½x18½, .40, 4.50
 2263.—Ditto, ditto, “ D, wove, 16x19, .40, 4.55
 2264.—Ditto, ditto, “ E, wove, 15x19½, .35, 4.00
 2265.—Ditto, ditto, Swedish, genuine, having the water-mark J. C. Munktell, as recommended by Prof. Fresenius.

Per quire, \$1.50

- 2266.—**Finger Tips**, of rubber, to put on the fingers when handling acids, iodine, etc. Each, .10

- 2267.—**Fire Syringe**, producing instantaneous light by sudden condensation of air, of brass, 7 in. cylinder. \$3.00

- 2268.—Ditto, ditto, of glass, with brass cap and piston. \$8.00

- 2269.—**Fire Clay**.

Per lb. .05

- 2270.—**Fittings**, for evolution bottles. Each, .30

- 2271.—Ditto, for wash bottles. “ .10

- 2272.—Ditto, for Woolf's bottles. “ .15

Flameless Lamp. See Aphlogistic Lamp.

- 2273.—**Flasks**, assay, or parting, long-necked, of hard Bohemian glass. Per doz., \$1.50

- 2274.—Ditto, assay, conical, flat bottom, with projecting ring around them about two-thirds of the way from the base to the top, to prevent the tongs from slipping when they are being lifted, thoroughly annealed, of best Bohemian glass. Each, .50

- 2275.—Ditto, ditto, best Bohemian glass, with lip, without ring.

Each, .50

- 2276.—**Flasks**, very best and genuine Bohemian, with vial mouth and flat bottom.

| | | | | | | | | |
|--------|------|------|--------|------|------|------|------------|---------------|
| 1 | 2 | 4 | 6 | 8 | 12 | 16 | 24 | 32 oz. |
| \$1.20 | 1.30 | 1.60 | 2.25 | 2.50 | 3.00 | 3.25 | 3.75 | 5.50 per doz. |
| | ½ | | 1 | | 2 | | 3 gall. | |
| | .75 | | \$1.25 | | 1.75 | | 2.00 each. | |

- 2277.—Ditto, ditto, flat bottom, vial mouth, pear shape, for dentists, etc.; 2 gallons. Each, \$2.50



2267

2273



2275



2276



2278.—Flasks, round bottom, vial mouth, pear shape.

| | | | |
|--------|------|--------|---------------------|
| 8 | 16 | 32 oz. | $\frac{1}{2}$ gall. |
| \$3.00 | 4.00 | 6.00 | 10.50 per doz. |

2279.—Ditto, ordinary flat bottom, with a ring around the neck to bear corking.

| | | | | | | |
|------------|------|------|------|------|--------------------|----------------|
| 1 to 2 oz. | 4 | 8 | 16 | 32 | $\frac{1}{2}$ gall | 2 |
| .12 | .15 | .20 | .25 | .35 | .75 | \$2.00 each. |
| \$1.20 | 1.50 | 2.00 | 2.50 | 3.50 | 7.50 | 20.00 per doz. |

2280.—Ditto, best Bohemian glass, flat bottom, pear shape, with ring around the neck.

| | | | |
|--------|------|------|---------------|
| 4 | 8 | 16 | 32 oz. |
| \$2.50 | 3.25 | 4.25 | 6.50 per doz. |

2281.—Ditto, round bottom, pear shape, with ring around the neck to bear corking. Prices the same as the foregoing.

2282.—Ditto, Rose's blow-pipe or "Reagirkelchen," of very small size, pear shape, with flaring mouth, for use with the blow-pipe.

Per doz. .60

2283.—Ditto, small, blown before the lamp, of best hard German glass, globular shape, light and thin glass, with flat bottoms, suitable for specific gravity.

| | | |
|---------------|---------------|-----------------|
| $\frac{1}{4}$ | $\frac{1}{2}$ | 1 oz. |
| .60 | .75 | \$1.00 per doz. |

2284.—Ditto, best German "Florence," vial mouth.

| | | | | | |
|--------|------|------|------|------|---------------|
| 2 | 4 | 8 | 16 | 24 | 32 oz. |
| \$1.25 | 1.60 | 2.25 | 2.75 | 3.25 | 3.75 per doz. |

2285.—Ditto, of best Bohemian, with a tubulature half-way up the neck.

| | |
|--------|--------------|
| 16 oz. | qts. |
| 75 | \$1.00 each. |

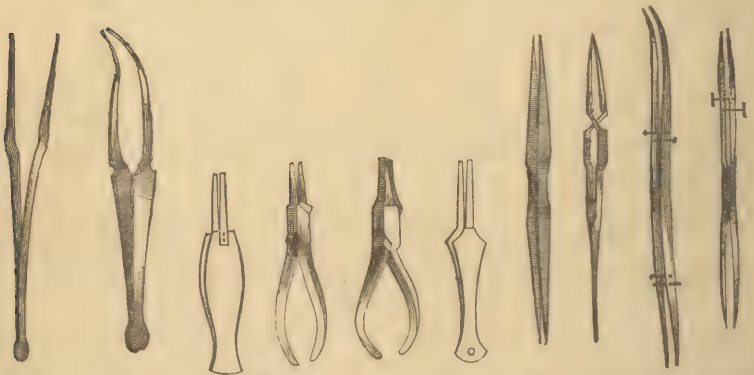
2286.—Ditto, ditto, ditto, with tubulature on either side of the bulb.

| | |
|---------------|------------|
| $\frac{1}{2}$ | 1 gall. |
| \$1.50 | 2.25 each. |

2287 —Ditto, Bologna.

Per doz., \$1.50

- 2288.—Flasks, copper. 1 qt., \$3.00; 2 qts., \$4.50 each.
 2289.—Ditto, iron. Each, \$1.00
 2290.—Ditto, gas, of best Bohemian glass, bottle shape, with ring around the neck.
- | | | | |
|-----|-----|-----|-----------|
| 8 | 16 | 32 | 48 oz. |
| .35 | .40 | .50 | .60 each. |
- Ditto, litre. See Litre Flasks, or Bottles.
 Ditto, oxygen. See Oxygen Retorts.
Float, Erdmann's. See Burette Swimmer.
Florentine Receivers. See Receivers.
Forks, for gas burners. See Gas Burners.



- | | | | | | | | | | |
|------|------|------|------|------|------|------|-------|------|------|
| 1291 | 2293 | 2292 | 2294 | 2296 | 2298 | 2299 | 2301A | 2300 | 2302 |
|------|------|------|------|------|------|------|-------|------|------|
- 2291.—Forceps, brass, ordinary, plain. Each, .50
 2292.—Ditto, ditto, stout. “ .75
 2293.—Ditto, ditto, ends bent in parallel directions, with ivory tips. Each, .75
 2294.—Ditto, jewelers, polished steel, square taper jaws. “ .75
 2295.—Ditto, ditto, heavier. \$1.00
 2296.—Ditto, ditto, unpolished. Stubb's, extra strong, for holding and crushing the button and minerals, in assay. Each, \$1.25
 2297.—Ditto, of polished steel, 7 inches long, and lined with cork. Each, \$1.00
 2298.—Ditto, steel, ordinary, small. “ .25
 2299.—Ditto, ditto, form No. 1. “ .50
 2300.—Ditto, ditto, form No. 2. “ .50
 2301.—Ditto, ditto, form No. 3, German silver point. “ .75
 2301.A—Ditto, steel, form No. 4, hardened rubber end. “ .75
 2302.—Ditto, ditto, form No. 5, German silver point. “ 1.00



2303



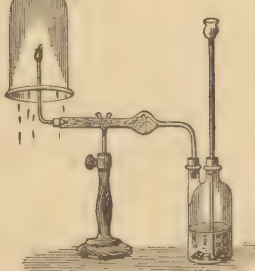
2306



2309



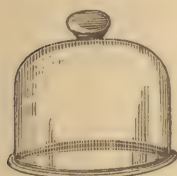
2311



2314



2313



2316

2303.—Forceps, steel, platinum point, ordinary German form.

Each, \$1.50

2304.—Ditto, ditto, ditto, German silver.

“ 1.75

2305.—Ditto, German silver, French shape, platinum ends.

“ 2.00

2306.—Ditto, steel, with extra heavy platinum points.

“ 2.50

2307.—Ditto, heavy brass, platinum ends.

“ 1.00

2308.—Ditto, wire, platinum points.

“ .75

2309.—Ditto, for breaking glass, heavy, of steel.

“ .75

2310.—Ditto, for bending wire, round ends, Stubb's.

“ 1.25

2311.—Ditto, for cutting wire.

“ .75

2312.—Ditto, brass, with spring.

“ .75

Fossils. See Minerals and Fossils.

2313.—Fountain in vacuo.

9.00

2314.—Formation of Water, apparatus for, produced by the combustion of hydrogen under a bell jar.

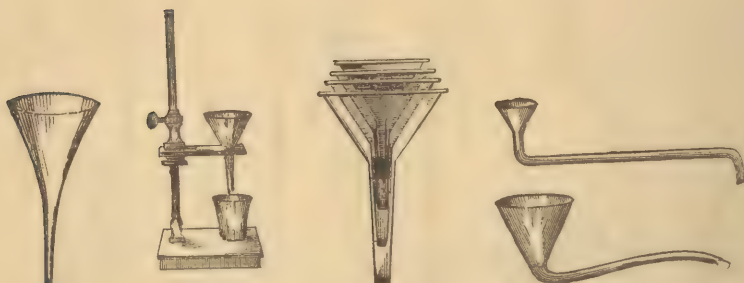
\$2.50

Fractional Distillation. See Distillation, Micro-Chemical Retorts, Flasks, etc.

2315.—Frames, for the charts and photographs mentioned in this catalogue, according to the styles required.

2316.—Freezing in vacuo, Leslie's apparatus.

\$3.00 to 6.00



2317

2319

2321

2323

2317.—Funnels, American glass.

| | | | | | | |
|-------|-----|-----|-----|-----|---------------------|-----------|
| 2 oz. | 4 | 8 | 16 | 32 | $\frac{1}{2}$ gall. | 1 gall. |
| .10 | .15 | .18 | .25 | .35 | .50 | .75 each. |

2318.—Funnels, best Bohemian glass, formed to an angle of 60° all the edges ground evenly.

| | | | | | | | | |
|----------------|-----|----------------|-----|----------------|-----|----------------|-----|-----------|
| $1\frac{1}{2}$ | 2 | $2\frac{1}{2}$ | 3 | $3\frac{1}{2}$ | 4 | $4\frac{1}{2}$ | 5 | 6 in. |
| .15 | .18 | .20 | .22 | .28 | .30 | .36 | .44 | .60 each. |

2319.—Ditto, ditto, formed especially after a pattern, with bottom of a cone formed to a true angle of 60° , and having a stem with parallel sides, made expressly for Bunsen's quick filtering apparatus.

| | | | | |
|-----|----------------|-----|-----|-----------|
| 2 | $2\frac{1}{2}$ | 3 | 4 | 5 in. |
| .20 | .25 | .30 | .40 | .50 each. |

2320.—Ditto, ditto, fluted or ribbed, best imported ground tops.

| | | | |
|-----|-----|-----|-----------|
| 2 | 3 | 4 | 5 in. |
| .20 | .30 | .40 | .50 each. |

2321.—Ditto, German glass, small, in nests of 3, largest 1 inch across the top. Per nest, .25

2322.—Ditto, ditto, angle 60° , tops unground.

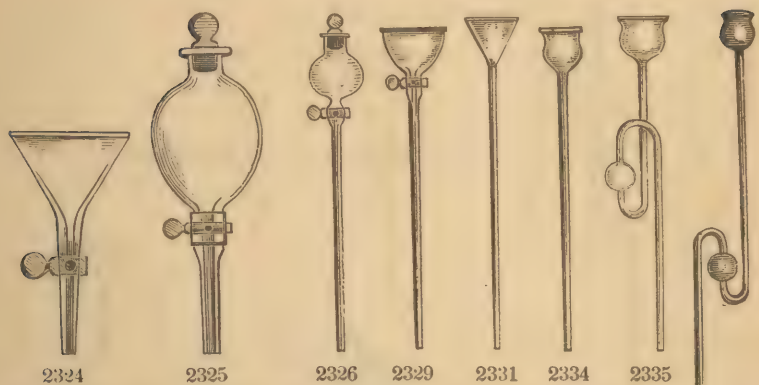
| | | | | |
|--------|------|------|------|---------------|
| 2 | 3 | 4 | 5 | 6 in. |
| .12 | .15 | .20 | .25 | .30 each. |
| \$1.00 | 1.20 | 2.00 | 2.50 | 3.50 per doz. |

2323.—Ditto, glass, long, bent stem, for filling retorts.

| | | | | |
|-----|-----|-----|-----|-----------|
| 2 | 4 | 1 | 18 | 24 oz. |
| .35 | .40 | .50 | .65 | .80 each. |

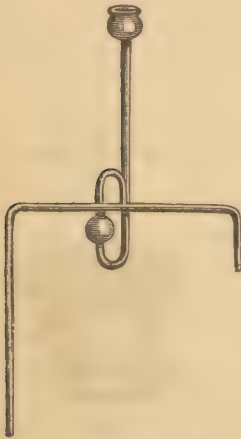
2324.—Ditto, separatory, of best Bohemian glass, conical, formed to an angle of 60° , with stopcock ground into the neck.

| | | |
|--------|------|------------|
| 4 | 6 | 8 in. |
| \$2.50 | 3.25 | 4.50 each. |



- 2325.—**Funnels**, separatory, globe shape, stoppered.
 1 qt. \$3.50
 2 qts. 4.50 each.
- 2326.—Ditto, ditto, globe shape, stoppered, small, with funnel tube for separation and use in volumetric analysis. Each, \$1.25
- 2327.—Ditto, ditto, ditto, hemispherical, of light blown glass. Each, \$1.00
- 2328.—Ditto, ditto, conical, formed on an angle of 60°, stout Bohemian glass. Each, \$1.50
- 2329.—Ditto, tubes, glass, with stopcock between the cone and the tube. Each, \$1.00
- 2330.—Ditto, ditto, glass, with plug stopper ground into the neck of the funnel. Each, \$1.00
- 2331.—Ditto, ditto, ordinary, conical, stout glass, length of stem,
 18 20 24 in.
 .15 .20 .25 each.
- 2332.—Ditto, ditto, conical, of light blown glass.
 12 16 18 in.
 .25 .30 .35 each.
- 2333.—Ditto, ditto, thistle top.
 12 18 in.
 .18 .25 each.
- 2334.—Ditto, ditto, thistle top, bulb double the size of the above, tube 18 in. long. Each, .30
- 2335.—Ditto, ditto, Welter's safety thistle top, one bulb. Each, .30
- 2336.—Ditto, ditto, ditto, 2 bulbs, 30 inches. Each, .40

- 2337.—Funnels, tubes, Welter's, 3 bulbs. Each, .50
 2338.—Ditto, ditto, ditto, conical top, 1 bulb. " .40
 2339.—Ditto, ditto, ditto, " 2 " " .50
 2340.—Ditto, ditto, ditto, " 3 " " .60
 2341.—Ditto, ditto, ditto, short stem, thistle top, 2 and 3 bulbs. Each, .50



2342



2343



2344



2346

- 2342.—Ditto, ditto, Mitscherlich's form, of 2 limbs and safety bulb, and thistle top funnel in the center. Each, .50
 2343.—Ditto, ditto, glass, Filling. " .50
 2344.—Ditto, porcelain, safety, with bulb at the base of the cone. Each, 75

2345.—Ditto, ditto, conical, with loop handle at the side.

| | | | | |
|-----|-----|-----|-----|--------------|
| 3 | 4 | 4½ | 5½ | 6 in. |
| .40 | .55 | .70 | .90 | \$1.00 each. |

2346.—Ditto, ditto, filtering, with staves inside.

| | | | | |
|-----|-----|--------|------|------------|
| 3 | 3¾ | 4½ | 5½ | 6 in. |
| .60 | .70 | \$1.00 | 1.40 | 1.70 each. |

2347.—Ditto, ditto, percolating. Each, \$3.50

2348.—Ditto, ditto, perforated, without stem.

| | | | | | |
|-----|-----|-----|-----|--------|------------|
| 3 | 3½ | 4 | 4½ | 5¼ | 6 in. |
| .40 | .50 | .60 | .70 | \$1.25 | 1.50 each. |

2349.—Ditto, ditto, ditto, with large holes to support cloth filters.

| | | | | | |
|-----|-----|-----|--------|------|------------|
| 3½ | 4½ | 5 | 5½ | 6½ | 7½ in. |
| .50 | .55 | .80 | \$1.00 | 1.50 | 1.75 each. |

2350.—Ditto, ditto, German, with handle. Each, .25

2351.—Funnels, gutta percha, conical.

| | | | | | |
|----------------|----------------|----------------|----------------|------|--------------------|
| $3\frac{1}{4}$ | $4\frac{1}{4}$ | $4\frac{3}{4}$ | $5\frac{1}{2}$ | 7 | $7\frac{1}{2}$ in. |
| .60 | .75 | \$1.00 | 1.50 | 1.75 | 2.00 each. |

2352.—Ditto, ditto, spherical, $\frac{1}{2}$ gallon.

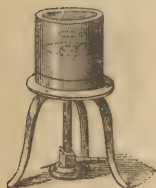
Each, \$5.00

Ditto, for hot filtration. See Filters.

Funnel Supports. See Supports.

FURNACES.

2353.—Furnace gas, Erdmann's, of fire clay, with tripod stand, without burner. .75



2353



2355



2357

2354.—Ditto, porcelain, to surround Bunsen's burner 1.00

2355.—Ditto, sheet iron, having 7 concentric rings on the top, mounted on three legs. \$4.50

2356.—Ditto, with large Rose's burner. 10.00

The above apparatus is found very useful by apothecaries and in small laboratories for evaporations, hot mixtures, etc.

Furnaces, for gas, small. See Stoves.

Ditto, for kerosene. See Stoves.

2357.—Ditto, French, hand, clay. Each, \$2.50 to 10.00

2358.—Ditto, Kent's, portable, sheet iron, small size, 17 in. high, of strong plate iron, lined with fire clay; it has six doors, the dome being hinged, that it may be more easily placed off or on; the openings are conveniently arranged for the reception of porcelain tubes; has a sand bath, water bath, a set of concentric rings, to receive a vessel as small as $3\frac{1}{2}$ inches in diameter.

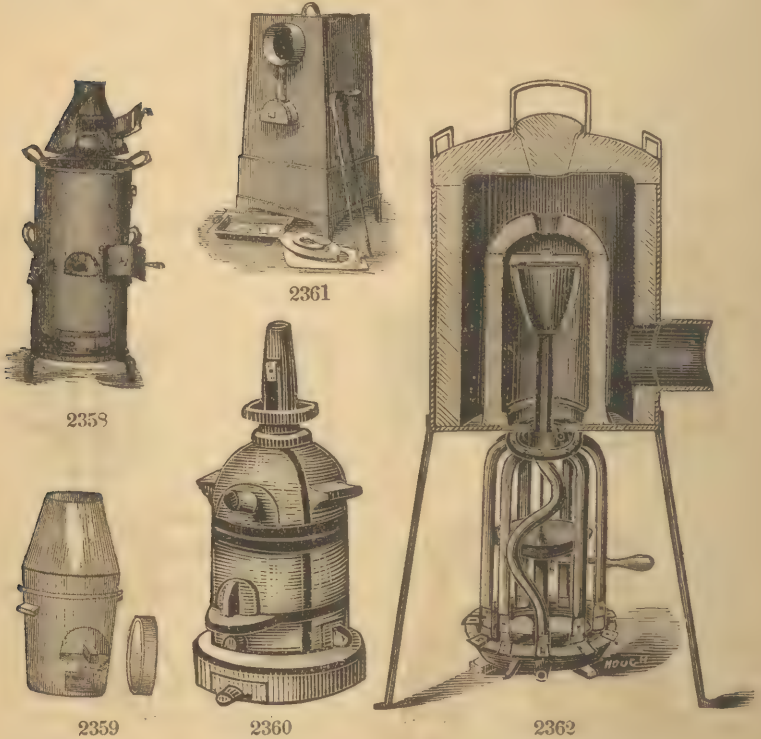
Each, \$25.00

2359.—Ditto, Chamott. " 3.00

2360.—Ditto, cupelling, French, of refractory clay, bound with iron bands; it is composed of three parts, without the dome,

with scorifying, cupel and tube openings, and stop doors for the same, complete.

| | | | |
|---------|-------|-------|-------------|
| Nos. 1 | 2 | 3 | 4 |
| \$15.00 | 20.00 | 25.00 | 35.00 each. |



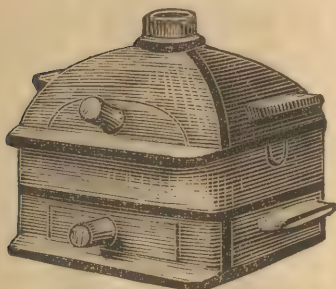
2361.—Ditto, Hibb's patent, of heavy cast-iron, lined with fire clay, with arrangements for the cupel muffle to extend through the center of the furnace, so the fire may extend all around it; has separate opening for tubes and retorts; it is supplied with water bath, sand bath, concentric rings, etc. A very highly esteemed and convenient furnace, as it may be used both for assay and heating purposes, and the muffle may be withdrawn at any time for examination. \$50.00

2362.—Ditto, Perrot's gas blast of sheet iron, with a thick lining of fire clay, as per sectional illustration. The blast is received underneath, and gas supplied to nine large Bunsen's burners, having the jets thrown to a common center; the supply of

gas is regulated by a hand crank. When in operation, the concentrated flame is forced up through an opening at the bottom of the furnace, and completely surrounds the crucible resting on a pestle of fire clay, enclosed in an inner wall of the same material, which soon becomes superheated to such an extent that five pounds of gold may be melted in the short space of eight minutes. This valuable furnace is also used by enamellers, jewelers, dentists, etc.

Nos. 1
\$40.00

2
60.00 each.



2360



2364



2365

2363.—Ditto, No. 0, melting 500 grammes of copper at one time.

\$35.00

2364.—Ditto, a new French crown, for gas, composed of a large number of jets on a circular support, and surrounded by an iron frame, which reflects the heat, and at the same time supports the vessel to be heated. It is very highly esteemed by all the manufacturers that have used it.

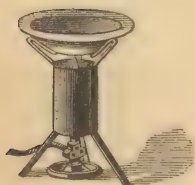
Nos. 1
\$8.00

2
10.00

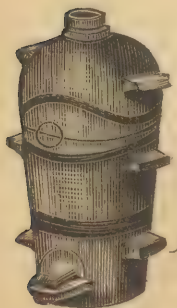
3
12.50 each.

2365.—Ditto, gas, Griffin's, for chemical operations at a white heat; it is 2 feet high and 8 in. wide, consisting of a brass

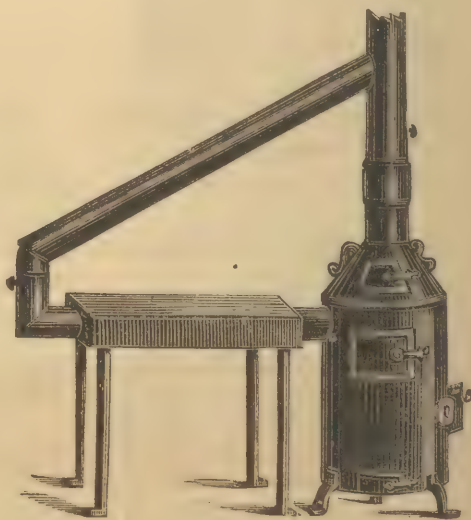
cylinder open at the bottom, at the top of which are 16 Bunsen's burners fixed, having a gas supply pipe regulated by stopcock. It rests on an iron stool, to which the chimney is attached by means of braces. The furnace itself is a cylinder of fire clay resting on a fire clay sole plate, which is pierced to receive the fire from the burner; it measures 6 inches in height, 8 inches outside diameter, and 5 inch bore. The crucible to be heated is supported on a perforated plumbago cylinder, and reaches within about an inch of the face of the gas burner. The dome, or roof of the furnace is carefully constructed so as to have a good draft; the consumption of gas when at work is 33 cubic feet an hour. \$20.60



2366



2367



2368

2366.—Furnace and Lead Basin, for etching, with hydrofluoric acid on glass. \$12.00

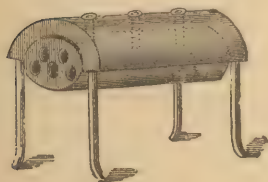
2367.—Ditto, enamellers, of French refractory clay, with large opening, for the use of enamellers, dentists, etc., in two parts, grates and stops for openings.

Nos. 1
\$20.00

2
25.00 each.

2368.—Ditto, Chilton's universal, of heavy sheet iron, lined with fire brick, having moveable grate and ash box; it is so arranged

that the pipe above the furnace slides up and down so as to permit the top to be removed, and the deep iron sand bath accompanying the furnace, to be put in the place of it. A set of cast iron rings accompanies the furnace, and the doors are suitably stopped. It is a very convenient furnace for all the purposes of a laboratory, such as melting, distilling, evaporating, cupelling, etc. \$40.00

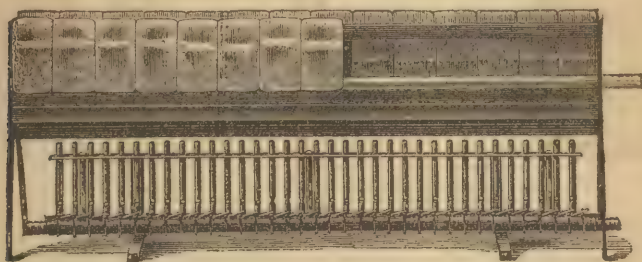


2369



2372

- 2369.**—Ditto, or oven, Carius's, for heating substances, in sealed glass tubes. \$12.00
- 2370.**—Ditto, ditto, with Kemp's gas regulator, two thermometers and Bunsen's burner. \$22.00
- 2371.**—Ditto, Erlenmeyer, for two tubes. 7.50
- 2372.**—Ditto, ditto, for four tubes. 9.00
- 2373.**—Ditto, two thermometers, 1 gas burner, 1 gas regulator, extra. \$10.00
- 2374.**—Glass Tubes for ditto, heavy, strong, hard glass. 1.00



2375

- 2375.**—Furnace Combustion, Bunsen's, improved, 25 burners, with stems, to turn on or off gas instantaneously. \$60.00
Ditto, ditto. See also Combustion Furnaces.
- 2376.**—Galactometer, consisting of a wooden standard, graduated with a tube attached to the same to receive the milk. \$3.00

2377.—Gallipots, French porcelain.

| | | | | | | |
|---------------|------|------|------|-------|-------|------------------|
| $\frac{1}{2}$ | 1 | 2 | 4 | 8 | 16 | 32 oz. |
| \$4.00 | 4.25 | 4.50 | 8.00 | 10.00 | 12.00 | 15.00 per gross. |

2378.—Ditto, German porcelain.

| | |
|-------------------|-------------------|
| $\frac{1}{4}$ oz. | $\frac{1}{2}$ oz. |
| \$2.00 | 3.00 per gross. |

2379.—Ditto, ditto, white porcelain, wooden covers.

| | | |
|---------------|------|-----------------|
| $\frac{1}{2}$ | 1 | 2 oz. |
| \$6.00 | 7.00 | 8.00 per gross. |

2380.—Ditto, ditto, fine translucent porcelain, with cover of the same material, $\frac{1}{2}$ ounce. Per gross, \$18.00**2381.—Ditto, ditto, yellow clay, without covers.**

| | | | | |
|---------------|-------|-----------------|-------|------------------|
| $\frac{1}{2}$ | 1 | 1 $\frac{1}{2}$ | 2 | 3 oz. |
| \$5.50 | 6.50 | 8.00 | 10.00 | 14.00 per gross. |
| 4 | 6 | 8 | 12 | 16 oz. |
| \$16.50 | 30.00 | 40.00 | 50.00 | 60.00 " |

Galvanic Apparatus, for electro plating. See the back part of this book.

Ditto, Batteries. See Electricity, under E.

Ditto, Decomposing Cells, Bunsen's, Hoffman's, etc. See the back part of this volume.

Galvanometers. See Electricity and Galvanism.

Gas and Water Analysis, Apparatus for. See the back part of this book.

Gas Bags, for air and hydrogen. See Balloons.

2382.—Ditto, of vulcanized rubber, oval.

| | | | | | | | |
|---------------|------|------|------|------|------|------|-----------|
| $\frac{1}{2}$ | 1 | 2 | 3 | 5 | 6 | 8 | 10 galls. |
| \$1.50 | 1.80 | 2.50 | 3.50 | 5.00 | 6.00 | 8.00 | 10.00 |

2383.—Ditto, ditto, with socket and stopcock additional.

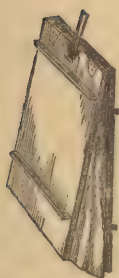
Extra, \$1.50

2384.—Ditto, ditto, with socket and mouth-piece. " .75**2385.—Ditto, square and oblong, for holding oxygen, hydrogen, etc., having cloth insertion, being well adapted to endure pressure, and warranted perfectly tight.**

| | | | |
|-------------|-------|-------|-------------|
| Size, 18x24 | 20x30 | 24x30 | 30x40 in. |
| 15 | 25 | 35 | 55 galls. |
| \$6.50 | 8.75 | 11.00 | 13.50 each. |

2386.—Ditto, ditto, with socket and stopcock. Extra, \$2.00**2387.—Ditto, pressure boards for the above. Per pair, \$10.00**

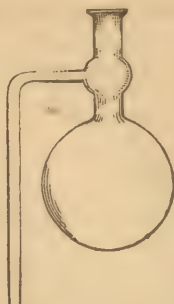
Gas Bottles. See Bottles.



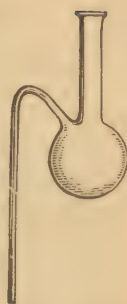
2387



2392



2394



2394

2388.—Gas Bottles, fitted with cork, funnel tube and bent delivery tube.

| | | |
|-----|-----|--------------|
| 8 | 16 | 32 oz. |
| .70 | .90 | \$1.25 each. |

2389.—Ditto, ditto, fitted with perforated cork, funnel tube, connecting tube and wash bottle with connecting tube and bent delivery tube.

| | | |
|--------|-------|------------|
| 8 oz. | 1 pt. | 1 qt. |
| \$1.10 | 1.40 | 1.85 each. |

2390.—Ditto, ditto, two necks, fitted with corks, funnel tube, and delivery tubes.

| | | |
|-------------------|-------|------------|
| $\frac{1}{2}$ pt. | 1 pt. | 1 qt. |
| \$1.00 | 1.50 | 1.75 each. |

2391.—Ditto, ditto, with two-necked wash bottle.

| | | |
|-------------------|-------|------------|
| $\frac{1}{2}$ pt. | 1 pt. | 1 qt. |
| \$1.80 | 2.30 | 2.80 each. |

2392.—Ditto, ditto, Berzelius, with glass tube running to the bottom of the bottle and fitted by an air tight joint, and also having a lateral tube on the shoulder. \$2.00

2393.—Ditto, ditto, Liebig's, with funnel, having plug stopper fitted with an air-tight joint and with delivery tube.

| | |
|---------------|-------------------|
| 4 oz., \$1.10 | 8 oz., 2.25 each. |
|---------------|-------------------|

Gas Burners. See Burners.

Gas Flasks, with tube on the side. See Flasks.

2394.—Ditto, with delivery tube sealed in the neck, for the manufacture of sulphuretted hydrogen. Each, .25

2395.—Ditto, consisting of an ordinary gas flask, fitted with safety funnel and delivery tube, for generating chlorine, etc.

| | | |
|-------|--------|---------------------|
| 1 pt. | 1 qt. | $\frac{1}{2}$ gall. |
| .90 | \$1.10 | 1.35 each. |

Gas Furnaces. See Furnaces.

- 2396.**—Gas Generator, Kipp's, for sulphuretted hydrogen, ordinary form, with safety tube in top. \$6.00



2396



2397

- 2397.**—Ditto, ditto, Bohemian, with double concentric and inner stoppers. \$7.50

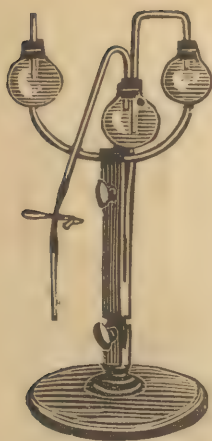
- 2398.**—Ditto, ditto, small, with safety funnel in top. 3.50

- 2399.**—Ditto, ditto, for hydrogen, of copper, brazed, to hold 15 gallons. Price, including bell and fittings, \$35.00

This is a first class apparatus, and will give an abundant supply for a large laboratory.

- 2400.**—Ditto, ditto, sulphuretted hydrogen, Babo's, consisting of two bulbs, with open mouth, united by a semi-circular tube, for the prompt supply of gas in small quantities. Price, mounted, \$2.50

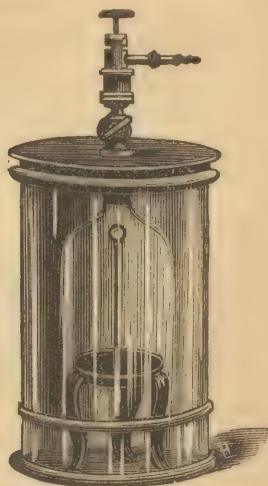
The bulb, on the right of the illustration, is half filled with lumps of sulphide of iron; the other bulb is partly filled with diluted sulphuric acid; the apparatus being placed on the support, revolves on the center, and can be fixed by the thumb-screw in any required position; when the bulb containing the sulphide of iron is raised above the other bulb, the acid is thrown back into the right bulb, and its action on the sulphide of iron ceases; otherwise, when this bulb is placed below, the sulphuric acid flows upon the sulphide of iron, and a continuous current of sulphuretted hydrogen gas passes off by the bent, glass tube, into the washing flask, and thence outward. When the apparatus is not in use, it is simply necessary to elevate the bulb containing the sulphide of iron and close the pinchcock on the flexible tube.



2400



2402



2403

2401.—Price of the glass part of the above apparatus, without wash bottle. Per doz., \$12.00

2402.—Gas Generators, hydrogen, of glass. Each, 5.00

2403.—Ditto, ditto, of extra heavy, French crystal glass jar, containing bell shape gas holder, leaden tripod, stopcock, and gallow-screw connector.

Height, 9 10½ 13½ 16 19 in.
\$10.00 12.00 15.00 20.00 25.00 each.

2404.—Ditto, for sulphuretted hydrogen, by the employment of asbestos. \$1.00

2405.—Ditto, ditto, for Oxygen, of copper, double bottom, and iron top, carefully secured. 1 qt., \$4.50 ½ gall., 6.00 each.



2401

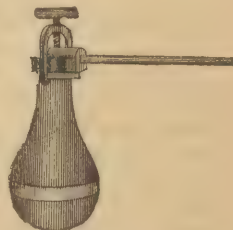
Gas Globes. See Deflagrating Globes.

2406.—Gas Holders, Pepys', made of japanned zinc, and having a glass tube on the side to indicate the quantity of gas in the gas holder.

10 galls. 15 galls.
\$20.00 25.00 each.

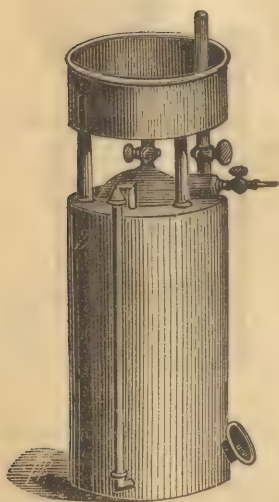
2407.—Ditto, ditto, of copper.

10 galls. 15 galls.
\$27.50 37.50 each.

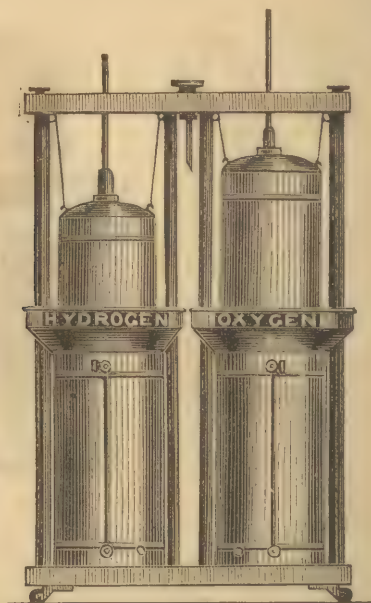


2405

2408.—Ditto, ditto, for oxygen and hydrogen, containing 15 gallons of very heavy japanned zinc, with bells, complete. \$70.00



2406



2409

- 2409.—Gas Holders**, for oxygen and hydrogen, 23 gallons, new arrangement for holding the bells always in perpendicular position, mounted on castors, and having weights enclosed in a frame. \$100.00

Gas Jars. See Bell Jars, Bell Glasses, etc.

- 2410.—Gasometer**, Bunsen's mercurial, graduated to millimeters. \$2.75

- 2411.—Gas Meter**, large, with exposed indices, covered with glass, stopcock, pressure indicator, regulator, and delivery jet. \$50.00

- 2412.—Gas Regulation Burner.** \$5.00

- 2413.—Gas Regulator**, Kemp's, improved by Bunsen. \$3.50

- 2424.—Gas Pistols**, japanned tin. .50

- 2415.—Gas Pipettes**, Ettling's, of glass. 2.00

Other Gas Apparatus. See Gas Analysis.

- 2416.—Gas Tubes**, plain, small, 6 inches in length.

Per doz., \$2.00

- 2417.—Ditto**, Bunsen's.

25 in $\frac{1}{2}$
\$1.25

50 in $\frac{1}{2}$
1.75

100 in $\frac{1}{2}$
2.00

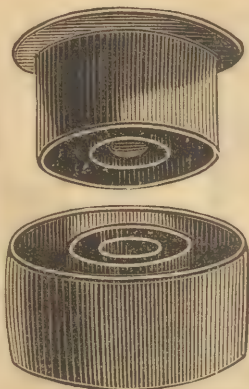
200 in 1
2.50 each.



24 5



2410



2419



2420

2418.—Gas Tubes, Bunsen's, 5 cubic inches in 10. Each, \$1.75

2419.—Gas Washing Apparatus, consisting of two porcelain dishes, fitting the one into the other, with concentric shoulders. \$5.00

2420.—Gasogenes, French, cane covered, for two bottles. Each, \$7.50

2421.—Gauge Tubes, for steam boilers. Per lb. 1.00

2422.—Gauze, of brass wire netting, 5, 10, 20, 40, 60, 80, and 100 meshes. Per square foot, .60 to .90

2423.—Ditto, of copper. " .85

2424.—Ditto, of iron. " .30 to .40

Geissler Tubes. See Electric Tubes.

2425.—Glass Blowers' Table, with sheet iron top, drawers, double bellows, and brass discharge pipe. \$40.00

2426.—Ditto, ditto, of wood, with double bellows. 15.00

2427.—Glass Plates, colored, for examination of colored flames, assorted.

| | | | |
|--|-----|-----|-----------|
| | 3x3 | 3x4 | 4x4 in. |
| | .10 | .15 | .20 each. |

2428.—Ditto, of fine French mirror glass, $\frac{1}{4}$ inch thick.

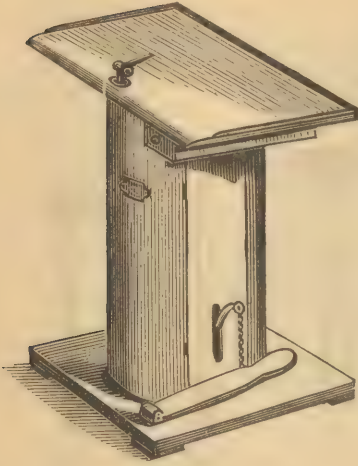
| | | | | | | |
|-----|-----|-----|--------|------|------|------------|
| 3 | 4 | 6 | 8 | 9 | 10 | 12 in. |
| .25 | .35 | .60 | \$1.00 | 1.25 | 1.50 | 2.25 each. |

2429.—Ditto, ditto, ground on both sides, 1 inch thick.

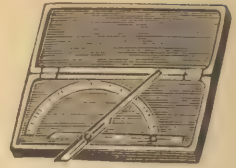
| | | | |
|--------|------|------|------------|
| 6 | 7 | 8 | 12 in. |
| \$2.00 | 2.25 | 2.75 | 8.50 each. |

See also Covers, glass.

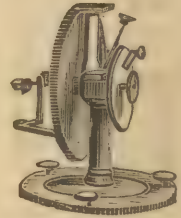
2430.—Glass Ends, for burettes, drawn. Each, .05



2325



2436



2437

2431.—Glass Pieces, small broken pieces. Per lb., .25

2432.—Glass Rods, assorted sizes and qualities. .60 to .75

Glass Tubing. See Tubing.

2433.—Glass Shades, furnished to order.

2434.—Ditto, feet, to ditto. Each, .40 to \$4.00

2435.—Gloves, india rubber, of best manufacture, without seam, for handling acids and acidulous preparations. Per pair, \$5.00

See also Finger Tips.

2436.—Goniometers, Hauys', for measuring the angles of crystals, in morocco case. Each, \$10.00

2437.—Ditto, Wollaston's, reflecting. " 30.00

2438.—Ditto, German, reflecting, with eye lenses to read the graduations. A very fine and accurate instrument. Each, \$50.00

2439.—Graduate Glasses, for test purposes, not engraved, with glass foot.

| | | | | | | |
|---------------|-----|-----|-----|-----|-----|-----------|
| $\frac{1}{2}$ | 1 | 2 | 4 | 8 | 16 | 32 oz. |
| .12 | .15 | .20 | .25 | .40 | .50 | .75 each. |

2440.—Graduates, registered minims, German, vase form.

| | |
|-----|-------------|
| 60 | 120 minims. |
| .50 | .75 each. |

2441.—Ditto, English form, glass foot.

| | |
|-----|-------------|
| 60 | 120 minims. |
| .50 | .75 each. |



2440

2441

2442.—Graduates, registered, English shape.

| | | | | | |
|-----|-----|-----|-----|--------|------------|
| 1 | 2 | 4 | 8 | 16 | 32 oz. |
| .25 | .30 | .45 | .60 | \$1.00 | 1.50 each. |



2443



2445



2446



2447



2448



2449



2450

2443.—Ditto, ditto, tumbler shape.

| | | | | | | | |
|---------------|-----|-----|-----|-----|-----|--------|------------|
| $\frac{1}{2}$ | 1 | 2 | 4 | 6 | 8 | 16 | 32 oz. |
| .35 | .40 | .50 | .65 | .70 | .80 | \$1.50 | 2.00 each. |

2444.—Ditto, ditto, French, carefully and accurately graduated.

| | | | |
|--------|------|------|------------|
| 8 | 12 | 16 | 32 oz. |
| \$1.00 | 1.25 | 1.75 | 2.25 each. |

2445.—Ditto, porcelain. 8 16 oz.
\$1.00 1.50 each.

Grain and Gramme Weights. See Weights.

2446.—Hammers, blow-pipe, Plattner's, usual form, square head, Nos. 2 and 3. Each, .75

2447.—Ditto, ditto, Freiberg style, octagonal, Nos. 1 and 4. " \$1.00

2448.—Ditto, mineralogical, pointed at both heads, for trimming, No. 5. Each, \$1.00

2449.—Ditto, ditto, one end pointed and the other flattened, No. 6. Each, \$1.25

2450.—Ditto, for watchmakers, small and round head. " 1.00

2451.—Ditto, geological, one head flattened and the other pointed, for breaking ores. Each, \$1.75

2452.—Ditto, ditto, extra large and heavy, for field work. " 2.00

2453.—Ditto, ditto, and polished, for use with two hands (small sledge). Each, \$2.50

2454.—Handles, of wood, for files, hammers, etc. " .06 to .50

2555.—Hand-bladder Glasses. Each, .75 to \$1.00

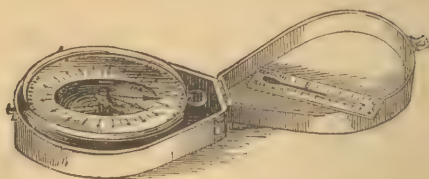
Hardness of Minerals, tests for. See Minerals.



2452



2456



2458



2455



2457



2459

Hessian Crucibles. See Crucibles.

Heat Apparatus. See collection at the latter part of this book.

Hoffmann's Ditto, collection of. See the list of the same at the back of this book.

2456.— **HOLDERS,** for caustic, ivory, with silver ends. Each, \$4.00

2457.— **Ditto,** for platinum spoons and wire. " .60

Ditto, for burettes, supports, test tubes, etc. See Supports, Test Tubes, etc.

2458.— **Holsterique Barometer,** with thermometer, accurately adjusted, fine polished brass mounting, in velvet-lined morocco case. Each, \$35.00

Hot Water Funnel. See Funnels.

2459.— **Hydrocylese,** or metallic syringe, French, in velvet-lined mahogany cases. For males, \$4.00

The chief merit of this clyso-pump is, that a piston is dispensed with, the liquid drawn in this capacity. Its construction is based on the simplest laws of Hydraulics, and is purely metallic. It can be employed advantageously for all kinds of injections, and, by increasing its volume, acts as a medicinal *douche*.

2460.— **Ditto,** ditto, ditto. For females, \$5.00

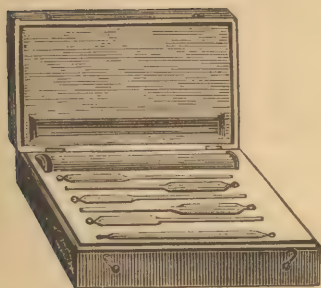
Hydrogen Generator and Pistols. See Gas.

Hydraulics and Hydrostatics. See collection at the close of this book.

HYDROMETRY.

- 2461.—Hydrometers, for Acids and acetous fermentations, Balling's. Each, \$1.25
- 2462.—Ditto, Otto's, 0 to 12, in fourths. " 1.25
- 2463.—Ditto, for Acids, Beaume's, 0 to 70, in fourths, in pasteboard cases. Each, .75
- 2464.—Ditto, ditto, ditto, for liquids heavier than water, Beaume's scale, graduated about 70.
- | | | |
|------|---------------|---------------|
| in 1 | $\frac{1}{2}$ | $\frac{1}{4}$ |
| .75 | .80 | .85 each. |
- 2465.—Ditto, for Alkali, or fluids lighter than water, Beaume's scale. Each, .75
- 2466.—Ditto, for ditto, in pasteboard cases, in 1. " .75
- 2467.—Ditto, ditto, ditto, in tin cases, No. 204. " .60
- 2468.—Ditto, ditto, ditto. " .50
- 2469.—Ditto, for Acid, in chamois-lined leather cases, with thermometer and glass jar complete.
- | | | |
|---------|------|------------|
| No. 995 | 996 | 997 |
| \$4.00 | 4.50 | 5.00 each. |
- Ditto, for alcohol. See Alcoholometers.
- 2470.—Ditto, Manual containing tables for alcoholometers, Pyle's. Each, .50
- 2471.—Ditto, empty cases for Hydrometers. " 50
- 2472.—Ditto, for Bark, in pasteboard cases. " 1.00
- 2473.—Ditto, Beer and Wort, Balling's, in pasteboard cases. " 1.00
- 2474.—Ditto, ditto, with thermometer, in " " " 2.00
- 2475.—Ditto, for Brine, pasteboard cases. " 1.00
- 2476.—Ditto, for Coal oil, 30 to 50. " .75
- 2477.—Ditto, up to 80. " 1.00
- 2478.—Ditto, Densimeter. " 1.00
- 2479.—Ditto, Ether, Beaume's scale. " .75
- 2480.—Ditto, ditto, pese, French, No. 2585. " 1.00
- 2481.—Ditto, for Fluids heavier than water, 0 to 70. Each, .75
- 2482.—Ditto, ditto ditto, with thermometer and specific gravity scale, 1000 to 2000. Each, \$2.00
- 2483.—Ditto, for Fluids lighter than water, 10 to 40. 75
- 2484.—Ditto, ditto, ditto, with thermometer and specific gravity scale, 700 to 1000. Each, \$1.50

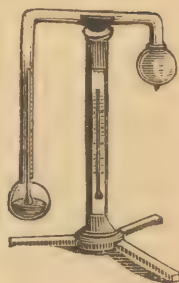
- 2485.—**Hydrometers**, for petroleum, etc. Each, \$2.00
- 2486.—Ditto, for Milk, ordinary style. “ .50
- 2487.—Ditto, ditto, 0 to 25. “ .75
- 2488.—Ditto, Milk Essayers, Chevalier, jar and therm'r, “ 1.50
- 2489.—Ditto, ditto, Quevenne, with jar and thermom'r, “ 1.00
- 2490.—Ditto, for Most and Wine, French, in tin cases. “ 1.50
- 2491.—Ditto, ditto, Oechsle's. “ 1.50
- 2492.—Ditto, for rich Oils, French, Lefebre, with thermometer in
pasteboard cases. Each, \$2.00
- 2493.—Ditto, ditto, ditto, 22 to 50. “ 2.00
- 2494.—Ditto, for Salt. “ .75
- 2495.—Ditto, **Saccharometers**, French, for testing syrup, in
pasteboard cases. Each, .75
- 2496.—Ditto, ditto, Beaume's, for Syrups and Sugar. “ .75
- 2497.—Ditto, ditto, Balling's, for “ “ “ \$1.00
- 2498.—Ditto, ditto, with thermometer enclosed. “ 2.00
- 2499.—Ditto, ditto, thermometer and Specific gravity scale extra.
Each, \$2.50
- 2500.—Ditto, ditto, for testing Sugar and Syrups, according to Dr.
Scheibler. In chamois-lined morocco case, with three spindles,
and cylinder. Each, \$15.00
- 2501.—Ditto, ditto, for Shellac, one spindle, in pastebo'rd cases. 1.00
- 2502.—Ditto, ditto, *Universal*, for **Specific Gravity**, one spindle
registering 700 to 2000, for fluids heavier or lighter than water,
in pasteboard box. Each, \$2.00
- 2503.—Ditto, ditto, two spindles, 700 to 1000 and 1000 to 2000, in
pasteboard boxes. Per set, \$3.00
- 2504.—Ditto, ditto, single spindles, in pasteboard boxes.
- | | | | |
|-------------|--------------|--------------|--------------|
| 700 to 850 | 1000 to 1200 | 1400 to 1600 | |
| 700 to 1000 | 1000 to 1400 | 1400 to 2000 | |
| 750 to 1000 | 1000 to 2000 | 1800 to 2000 | |
| 850 to 1000 | 1200 to 1400 | | Each, \$1.50 |
- 2505.—Ditto, ditto, sets, Specific gravity, from 700 to 2000, finely
and accurately divided, in light glass jars, swelled top, with
wooden feet. Per set, \$3.50
- 2506.—Jars alone, for the above. Each, .50
- 2507.—Ditto, for **Specific Gravity**, single spindle, 1000 to 2000,
with thermometer and fine glass jar, in chamois-lined leather
cases. Each, \$5.00



2511



2524

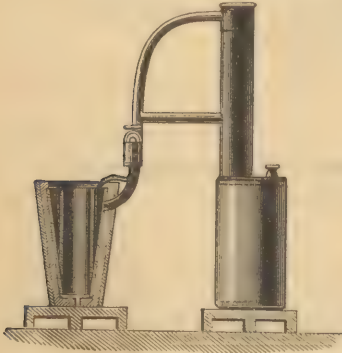


2525

- 2508.**—Hydrometers, for Specific Gravity, two spindles. Each, \$6.50
- 2509.**—Ditto, ditto, ditto, in fine chamois-lined mahogany cases. with thermometer and glass cylinder. Each, \$9.75
- 2510.**—Ditto, ditto, three spindles. “ 11.50
- 2511.**—Ditto, ditto, six “ “ 14.00
- 2512.**—Ditto, ditto, seven “ “ 16.00
- 2513.**—Ditto, Twaddle’s, in sets of six spindles.
- | | | | |
|--------|--------------------|-------------------|--------------|
| No. 1, | 0 deg. to 24 deg., | specific gravity, | 1000 to 1120 |
| No. 2, | 24 “ to 48 “ | “ “ | 1120 to 1240 |
| No. 3, | 48 “ to 75 “ | “ “ | 1240 to 1370 |
| No. 4, | 74 “ to 102 “ | “ “ | 1370 to 1510 |
| No. 5, | 102 “ to 138 “ | “ “ | 1510 to 1690 |
| No. 6, | 138 “ to 180 “ | “ “ | 1690 to 2000 |
- The entire set of six, with spherical bulb. Each, \$6.00
- 2514.**—Ditto, sets of six, with cylindrical bulb. “ 5.00
- 2515.**—Ditto, single spindles. “ 1.25
- 2516.**—Ditto, sets of five spindles, in black walnut box. “ 5.50
- 2517.**—Ditto, for Urine, French. Each, .50
- 2518.**—Ditto, ditto, with one spindle, of fine graduation, indicating from 1000 to 1040, with solution tube. Each, \$2.00
- 2519.**—Ditto, Solution tubes, extra. “ .25
- 2520.**—Ditto, for Vinegar. “ .75
- 2521.**—Ditto, Jars, with brass foot. Each, \$1.50
- Ditto, Jars, with glass foot. See Jars.
- 2522.**—Hydrometers, Nicolson’s, of japanned tin, for ascertaining the specific gravity of minerals, etc. Each, \$2.00
- 2523.**—Ditto, ditto, with a set of decimal weights. “ 4.00
- 2524.**—Ditto, ditto, brass, finely adjusted with a set of weights, all in case, without jar, complete. Each, \$6.00

Hydrogen Lamps. See Doebereiner's Lamp.

- 2525.**—**Hygrometers**, Daniels' on polished stand and gilt marks. Each, \$9.00
- 2526.**—Ditto, Mason's, on boxwood stand. " 4.50
- 2527.**—Ditto, Saussure's, hair, mahogany stand. " 4.00
- 2528.**—Ditto, ditto, on brass stand. \$8.00 to 12.00
- 2529.**—Ditto, August Psychrometer, two thermometers, wet and dry bulb, and fine divisions. Each, \$12.00



2530



2531



2532

- 2530.**—**Ice Freezer**, Carré's apparatus, imported only to order. \$150.00

It consists of a generator and receiver, made of iron boiler-plate, the receiver being conical in shape, both connected by means of a strong iron tube. In the generator is placed a strong solution of ammonia saturated at 0° , and this is heated over a large gas flame, the receiver meanwhile being immersed in the water. The liquified ammonia passes again into the gaseous state, and is re-absorbed by the water in the generator. But in this evaporation, great cold is produced, and the vessel of water is soon frozen. The ammonia going over can be used indefinitely.

- 2531.**—Ditto, Hoffman's apparatus, in glass, showing the principle of Carré's ice freezer. \$15.00
- 2532.**—**Ivory Scale**, Harcourt's, for measuring the button in assay, very accurate, made specially to order for me. \$5.00
- 2533.**—**Ignition Tubes.** Per doz. \$2.50
- 2534.**—**Indicator of Fire Damp, Electric.** 7.50

The large cup is filled with porous plaster of Paris, and is connected with the bulb-tube opposite to it (which contains a small quantity of mercury), by means of a brass tube. The top of the bulb has a screw cap to hold one of the electrodes. The other electrode is screwed to the base, and connects with large cup; when the porous cup absorbs the fire-damp gas, the mercury presses on the narrow tube, making connection with upper cup, completing the circuit, and ringing the bell.

2543.—Ditto, ditto, with glass foot and ring around the neck, ground top to receive glass plate.

| | | | | | |
|--------|------|------|-------|--------|--------------|
| 5x1½ | 6x1¾ | 8x1⅝ | 10x2 | 10½x1¾ | 11½x1¾ in. |
| .30 | .35 | .40 | .45 | .50 | .55 each. |
| 12½x1¾ | 13x2 | 15x2 | 18x2½ | 20x2½ | 25x3 in. |
| .60 | .65 | .70 | .75 | .80 | \$2.00 each. |

2544.—Ditto, ditto, lipped.

| | | | | | |
|------|------|-------|-------|--------------|------------|
| 5x⅝ | 6x1½ | 7½x1⅝ | 8x1½ | 10x2 | 11½x2½ in. |
| .30 | .35 | .37 | .40 | .45 | .50 each. |
| 13x2 | 15x½ | 15x2 | 20½x1 | 25x3 in. | |
| .52 | .50 | .55 | .75 | \$2.00 each. | |

Intermediate sizes of the above jars will be in proportion.

2545.—Ditto, Infusion.

Pints, \$1.50 quarts, 2.00 each.

2546.—Ditto, Leech.

Quarts, .50 galls., \$2.50 each.

2547.—Ditto, Leyden.

| | | | | |
|--------|-------|---------|---------|------------|
| ½ pt. | 1 qt. | ½ gall. | 1 gall. | 2 galls. |
| \$1.25 | 1.50 | 2.50 | 3.25 | 4.00 each. |

2548.—Ditto, Mercury, glass.

Each, \$1.00 to 1.50

2549.—Ditto, ditto, or Powder, cylindrical, of porcelain, about 4 inches high and 2½ inches diameter, with small opening at the top.

Each, \$1.75

2550.—Ditto, specie, ground tops, if desired.

| | | | | | |
|-------|-------|------|---------|---------|--------------|
| ½ pt. | 1 pt. | 1qt. | ½ gall. | 1 gall. | 2 gall. |
| .15 | .18 | .25 | .35 | .50 | \$1.00 each. |

2551.—Ditto, ditto, fluted sides.

Pints, .30 quarts, .50

2552.—Ditto, ointment, glass, flat shape, swelled tops.

1 oz., \$1.50 2 oz., 2.00 per doz.

2553.—Ditto, ditto, porcelain, glazed, flat covers.

| | | | |
|-------|--------|--------------|------|
| 8 oz. | 16 oz. | 1 qt. | |
| .60 | .75 | \$1.25 each. | 2554 |



2554.—Ditto, ditto, fine French choice porcelain, with fire-gilt bands. 1 oz., \$3.50 4 oz., 4.00 per doz.

2555.—Ditto, ditto, white porcelain, conical cover, knobbed.

| | | |
|-----|--------|------------|
| 8 | 16 | 32 oz. |
| .75 | \$1.00 | 1.25 each. |

2556.—Ditto, ditto, French, labelled, 17 c. c. high. Each, \$1.30



2557



2561



2563



2564



2565, '66

2557.—Jars, ditto, round, with conical top, knobbed, tall shape, of the very best translucent and highly glazed china porcelain, with fire-gilt decorations, and labelled.

| | | | | | |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|-----------------------------|--|
| $4\frac{1}{2} \times 2\frac{3}{4}$ | $4\frac{1}{2} \times 3\frac{1}{4}$ | $7\frac{1}{2} \times 4\frac{1}{2}$ | $8\frac{1}{2} \times 4\frac{1}{2}$ | $6 \times 3\frac{1}{2}$ | $6\frac{1}{2} \times 4\frac{3}{4}$ in. |
| \$1.50 | 1.75 | 2.25 | 2.50 | 2.75 | 2.85 |
| $6\frac{3}{4} \times 4\frac{1}{4}$ | $7 \times 4\frac{1}{4}$ | $7\frac{1}{2} \times 4\frac{1}{2}$ | $8 \times 4\frac{1}{2}$ | $9 \times 5\frac{3}{4}$ in. | |
| \$3.00 | 3.00 | 3.15 | 3.25 | 3.50 each. | |

The above measurements are made under the cover, and are approximate, the actual measure being in millimeters, do not precisely correspond with English measures. These jars are well known to be about the only kind through which ointments will not penetrate.

2558.—Ditto, ditto, ditto, octagonal shape, $4\frac{1}{4} \times 8$. Each, \$2.50

2559.—Ditto, ditto, octagonal and oblong, $4\frac{1}{4} \times 6 \times 7\frac{3}{4}$. " 1.50

2560.—Ditto, Preparation, employed for the collection of anatomical preparations, of fine white and clear glass, having the stoppers thoroughly ground in with fine emery, and provided with glass hook from which to suspend the objects to be preserved.

| | | | | | |
|-------|------|--------|---------------------|------|------------|
| 8 oz. | pts. | qts. | $\frac{1}{2}$ gall. | 1 | 2 |
| .70 | .75 | \$1.25 | 1.75 | 3.00 | 6.00 each. |

2561.—Ditto, ditto, of Bohemian glass, having the mouth parallel with the sides.

| | | | | | |
|--------------|-------------------------|-------------------------|--------------|---------------|-------------------|
| 2×4 | $2\frac{1}{2} \times 5$ | $3\frac{1}{2} \times 6$ | 4×7 | 6×13 | 10×8 in. |
| .50 | .75 | \$1.15 | 1.75 | 6.00 | 15.00 each. |

2562.—Ditto, ditto, with stopper ground into the base of the jar, the top being oval; used for laying down preparations or exhibiting specimens.

| | | | |
|-----|-----|-----|--------------|
| 4 | 8 | 16 | 32 oz. |
| .30 | .50 | .75 | \$1.00 each. |

2563.—Jets, brass, for hydrogen. Each, .40

2564.—Ditto, ditto, with stopcock and cap. " \$2.00

2565.—Ditto, for washing bottles, ordinary glass, bent. " .06

- 2566.—**Jets**, for Faraday's washing bottles, drawn. Each, .10
 2567.—Ditto, for Berzelius's washing bottles. " .25
 2568.—Ditto, for Bunsen's burners, flattened ends. " .25



- 2569.—Ditto, Blast, to place in a Bunsen burner, having an extra tube to connect with blow-table and produce blast. Each, \$1.00
 2570.—**Jewelers' Globes**. " 1.50
 2571.—**Julep Tubes**, straight or bent. Per doz., 2.50
 2572.—**Kettles**, porcelain, small. Each, 3.50
 2573.—Ditto, ditto, large. " 8.50
 2574.—**Knife**, for cutting cork, wooden handle. .40
 2575.—Ditto, for blow-pipe use, with file on back. .75
 2576.—Ditto, for cutting around glass tubing. .50
 2577.—Ditto, sharpeners, of porcelain.

5 in. .40

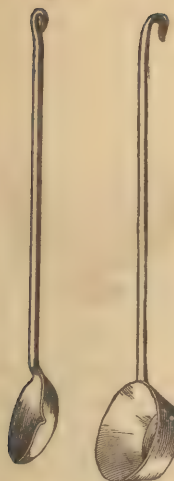
6½ in. .50 each.

- Kipp's Apparatus** for sulphuretted hydrogen. See Gas.
 2578.—**Labels**, Chemical, with the old and new nomenclature, and old and new symbols on the same paper. Per set, .20
 2579.—Ditto, Mawson's, in book form, with gum backs, double nomenclature. Per book, .50
 2580.—Ditto, blank. Per doz. sheets, .36

Lactometers, milk. See Milk Assayers.

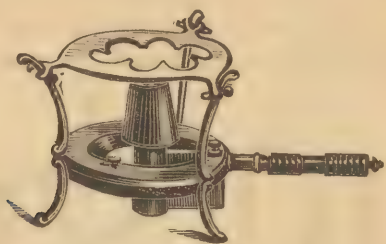
- 2581.—**Lactoscope**, Vogel's, or optical milk test, in wooden case. \$12.00

The above illustration consists of a vessel in a semi-circular brass frame and parallel glass sides, one-fifth of an inch apart. When this vessel is filled with a mixture of new milk and water, the appearance of the mixture is examined by placing a candle at a distance of three feet from one side of it, and the eye close to the other side; the presence of a certain proportion of cream renders the figure of the candle flame indistinct. The smaller the quantity of milk required to obviate the candle light the better is the quality of the milk. With the above comes a glass graduated vol cylinder on foot, with spout, and a graduated vol pipette. The manner of operating with this, showing the precise quantity of butter indicated in the milk, will be furnished with the instrument.



2582

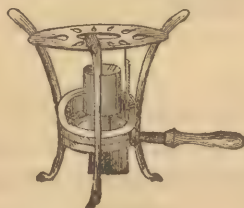
2583



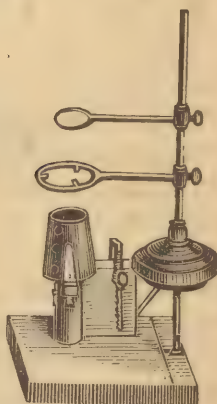
2591



2589



2590



2593



2586

2582.—Ladles, iron, for pouring metals.

3-inch bowl, .40

5-inch, .50 each.

2583.—Ditto, tinned, long handles.

5

5½

6 in.

.60

.70

.80 each.

2584.—Ditto, porcelain, long handles.

Each, .50

2585.—Lamps, for perfuming rooms, without flame.

“ \$1.25

Ditto. See Davy's Safety.

2586.—Ditto, alcohol blast, Russian.

1.50

2587.—Ditto, brass blast, consisting of a large brass reservoir on stand, with jet bearing on a lamp underneath.

Each, \$7.50

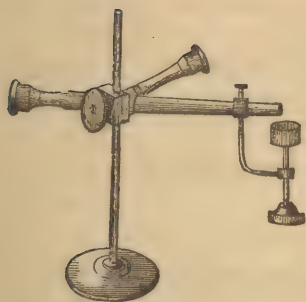
2588.—Ditto, alcohol, of brass, mounted on three legs, with sheet iron jacket, containing a triangle to hold a crucible immediately over the flame jet; the jacket increases the heat.

Each, \$12.00

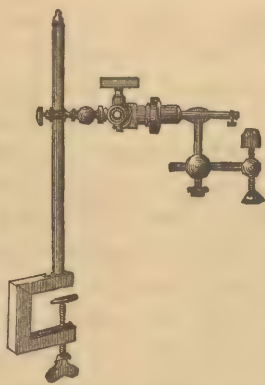
2589.—Ditto, ditto, Lang's, on tripod, with porcelain handle and support for crucibles, or perforated sheet iron shelf, on top.

Each, \$3.00

- 2602.**—Lamps, brass, long stem, for heating tubes and soldering. Each, \$1.25
- 2603.**—Ditto, engravers, the top is to be filled with water to concentrate the light. Each, \$4.00
Ditto, hydrogen. See Doebereiner's Lamps.
- 2604.**—Ditto, Plattner's blow-pipe, brass, extra heavy, mounted on stand. Each, \$3.00
Lamps, gas. See Burners.
Lamp Stands. See Supports.
- 2605.**—Lamps, Laboratory, large wooden foot, with clamp, reflectors, etc. Each, \$20.00
- 2606.**—Ditto, Students. Each, \$2.50 to 4.00
Ditto, electric. See Electric Lamps.
- 2607.**—Ditto, Magnesium, with fan wheel and clock-work, for burning magnesium ribbon or wire. Each, \$25.00



2608

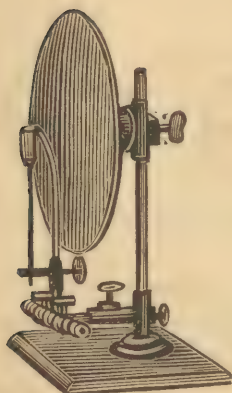


2610



2612

- 2608.**—Ditto, oxyhydric, of brass, mounted, on stand. Each, \$7.50
- 2609.**—Ditto, ditto, ditto, larger. " 16.00
- 2610.**—Ditto, ditto, larger, with extra arrangement for lime holder, moveable joints, etc. Each, \$20.00
- 2611.**—Ditto, ditto, ditto, very accurately adjusted, silver plated. Each, \$22.50
- 2612.**—Ditto, ditto, on stand, French, Duboscq's pattern. " 25.00
- 2613.**—Ditto, ditto, on iron stand. " 20.00
Ditto, cylinders. See Burner Furnaces.



2613



2620



2622



2623



2621



2628

2614.—Lamp Wicks, for Berzelius's, Rose's, Müller's, etc.

Per doz., .25

2615.—Ditto, for Plattner's blow-pipe lamp.

Per yard, .25

2616.—Lead Trays, for etching, on glass, with hydrofluoric acid.

Each, .40

Lead Retorts, for making hydrofluoric acid. See Retorts.

2617.—Leaf, Dutch.

Per book, .25

2618.—Ditto, Gold.

" \$1.00

2619.—Ditto, Silver.

" .75

2620.—Leech Tubes.

Per doz., 1.00

2621.—Lenses, magnifying, for assayers' use, or reading fine print, etc.

Each, \$2.50

2622.—Ditto, Coddington, brass.

Small, \$2.25

large, 2.50 each.

2623.—Ditto, Stanhope, German silver, for examination of minerals.

Small, \$2.00

large, 2.50 each.

2624.—Ditto, ditto, silver. Small, \$2.50 large, 3.50 each.

2625.—Ditto, ditto, silver, with cap, to keep the dust from them.

small.

Each, \$3.50

2626.—Ditto, horn cases, single.

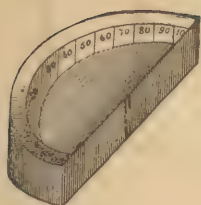
9 lines, .75

11 lines, \$1.00 each.

2627.—Ditto, ditto, double glasses.

9 lines, \$1.25

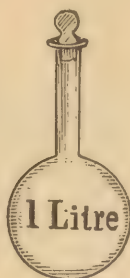
12 lines, 1.50 each.



2632



2633



2635



2636

2628.—Lenses, horn cases, triple glasses.

9 lines, \$1.50

11 lines, 1.75 each.

2629.—Ditto, Photographic, Steinheil, of Munich, a very correct and clear glass. \$30.00

2630.—Ditto, watchmakers. 2.50

2631.—Ditto, a set of convex and concave, in a box. 2.50

Liebig's Potash Bulbs. See Potash Bulbs.

2632.—Light, Refraction of, apparatus for. 5.00

2633.—Light Recomposition, revolving disc, with prismatic colors, arranged consecutively. \$2.50

2634.—Litmus Papers, blue, red or neutral, for test papers.

Per sheet, .05

See also Tumeric Paper.

2635.—Litre Bottles, stoppered and accurately gauged.

| | | | | | | | |
|--------|-----|-----|-----|-----|---------------------|------|------------|
| 50 cc. | 100 | 150 | 250 | 300 | $\frac{1}{2}$ litre | 1 | 2 |
| .35 | .45 | .50 | .75 | .85 | \$1.00 | 1.10 | 1.50 each. |

2636.—Litre Flasks.

| | | | | | | |
|--------|-----|-----|-----|---------------------|---------------|--------------|
| 30 cc. | 50 | 100 | 200 | $\frac{1}{4}$ litre | $\frac{1}{2}$ | 1 |
| .25 | .30 | .40 | .60 | .65 | .85 | \$1.00 each. |

2637.—Ditto, ditto, two marks on the neck.

| | | |
|----------|------------|----------------|
| 50 to 55 | 100 to 110 | 200 to 220 cc. |
| .60 | .75 | \$1.25 each. |

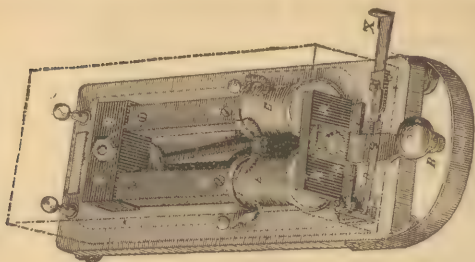
2638.—Limb, Safety, Liebig's. Each, .50

2639.—Magic Lanterns, French, square tin.

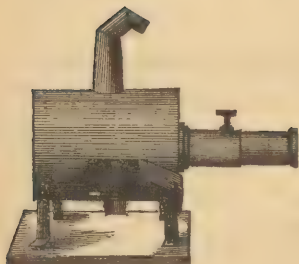
| | | |
|--------|--------|-------------|
| Small | medium | large |
| \$6.00 | 10.00 | 15.00 each. |

2640.—Ditto, ditto, black, oval shape, provided with a ratchet screw and pinion for drawing in and out the lenses. Ea. \$25.00

Magic Circles. See Electricity.



6241



2640



2647



2650

2641.—Magneto-Electric Apparatus, new invention, for firing the fuses, etc., in mine blasting. \$100.00

In this apparatus the armature *A A* is always in contact with the poles of the magnet *N, O, S*. It is supported by a piece of metal, *B M*, which turns around a horizontal axis, *a*; this piece presents a kind of handle, *B a*, having a knob at *B*, upon which one strikes with the finger in order to produce the withdrawing of the armature; thus, at the moment of this withdrawal, a first induction current is produced, passing contemporaneously with the movement which causes it, through the wire surrounding the extremities of the magnet. As long as one keeps the armature withdrawn from the magnet, the apparatus is inert; but as soon as one ceases to bear down on the button *B*, the armature, impelled by a spring which acts on the lever *a B*, drawn besides by the magnet, it turns instantly to the contact of the poles *N S*; a second current is produced in a contrary direction to the first, of equal intensity, as can be easily demonstrated with the galvanometer. There is also connected with the instrument a stop *X*, the employment of which holds the armature in a fixed position, so that it is impossible for electricity to pass. This instrument works in all weathers; and, while it is impossible to fire the fuse when the stop *X* is placed upon the armature, a simple withdrawal of the stop *X*, and a smart rap of the finger upon the handle *B*, will instantly fire a fuse by the electric current through a wire 500 to 600 yards in length.

2642.—Magneto-Electric Machine, in black walnut box, with battery, complete. \$10.00

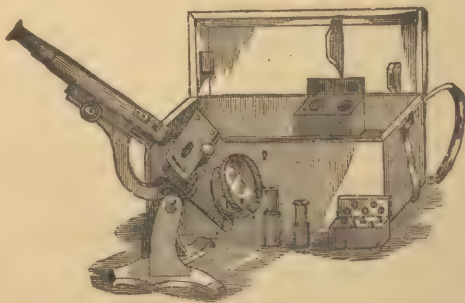
- 2643.**—**Magneto-Electric Machine**, fine polished mahogany box, with Universal lock. \$35.00
- 2644.**—**Magnesium**, ribbon and wire. Per foot, .06
- 2645.**—Ditto, ditto, ditto. Per ounce, \$3.25
- 2646.**—**Magnets**, steel, straight. Each, 1.00
- 2647.**—Ditto, Horseshoe, best English quality.
- | | | | | | | |
|-----------------|-----|-----------------|-----|-----|--------|------------|
| 2 $\frac{3}{8}$ | 3 | 3 $\frac{1}{2}$ | 4 | 5 | 6 | 10 in. |
| .25 | .30 | .60 | .75 | .90 | \$1.25 | 2.50 each. |
- 2648.**—Ditto, Horseshoe, compound. Each, \$4.00
- 2649.**—Ditto, pair of bar, in box. “ 3.50
- 2650.**—**Magnetic Needle**, on stand. 1.75
- 2651.**—Ditto **Dipping Needle**, with brass stand, simple form. 2.00
- 2652.**—Ditto, ditto, more elaborate. 8.00
- 2653.**—Ditto, **Toys**, in boxes. .50 to 1.50
- Marchand's Drying Tube.** See Chloride of Calcium Tube.
- 2654.**—**Mariotte's Law**, apparatus for. \$10.00
- Marsh's Arsenic Test.** See Arsenic.
- 2655.**—**Matrasses**, Bohemian, round bottom, long neck.
- | | | | | |
|-----|-----|-----|-----|-----------|
| 4 | 8 | 16 | 24 | 32 oz |
| .20 | .30 | .35 | .40 | .45 each. |
- See also Bolt Heads.
- 2656.**—**Measures**, gutta percha, tall.
- | | | |
|-----------------|----------------------------------|------|
| 1 quart, \$3.00 | $\frac{1}{2}$ gallon, 3.50 each. | 2659 |
|-----------------|----------------------------------|------|
- 2657.**—Ditto, conical, quart. Each, \$3.00
- 2658.**—Ditto, Harcourt's, for assayers, ivory, very accurate. “ 5.00
- 2659.**—Ditto, lead, for blow-pipe apparatus. “ .50
- 2660.**—Ditto, porcelain, with handle and lip.
- | | | | |
|-----|-----|-----|--------------|
| 2 | 4 | 8 | 16 oz. |
| .35 | .55 | .75 | \$1.00 each. |
- Mechanical Powers.** See Apparatus, Mechanics.
- 2661.**—**Mercury Box**, earthen, oblong, glazed, 2x5. .75
- 2662.**—Ditto, **Bottles**, or Flasks of iron. Each, \$1.50
- 2663.**—Ditto, **Jar**, or Powder Cup, porcelain, 5 lbs. 1.50
- 2664.**—Ditto, ditto, glass.
- | | | |
|--------|------|------------|
| 16 | 18 | 24 in. |
| \$1.00 | 1.50 | 2.00 each. |
- 2665.**—**Mercurial Receiver**, Cooper's, plain, small. .50
- 2666.**—Ditto, ditto, larger. \$1.00
- 2667.**—Ditto, ditto, stoppered at the top. 1.50



- 2668.—**Mercurial Receiver**, graduated, plain. \$1.25 to 1.50
- 2669.—**Mercury Shower**, through porous wood. 3.00
- 2670.—Ditto, **Trough**, porcelain, to hold 5 lbs. 1.00
- 2671.—Ditto, ditto, to hold 16 lbs. 2.00
- 2672.—**Metre Measures**, graduated to millimeters on one side, English inches on the other side, graduated by government standard, folding together in short lengths for the pocket, of box-wood. Each, .50
- 2673.—Ditto, ditto, ditto, of ivory. " \$2.25
- 2674.—Ditto, ditto, fine ivory ruler, or paper cutter, for the desk, with a knob in the center. Each, \$7.50
- 2675.—Ditto, ditto, ivory, small, graduated 10 to 12 centimeters.
- 2676.—**Microscopes**, No. 1, Universal joint, on flat standard, small. Each, \$7.50
- 2677.—Ditto, ditto, No. 3. " 10.00
- 2678.—Ditto, ditto, No. 4. " 15.00
- 2679.—Ditto, No. 1, supported on two columns, with thumb screw, allowing the tube to rest in an upright or vertical position, having two objectives and a jointed light reflector. Ea. \$25.00
- 2680.—Ditto, ditto, by Natchet, compound. " 20.00



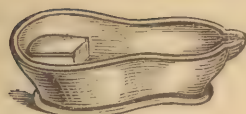
2668



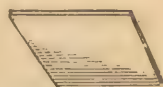
2681

- 2681.—Ditto, large, Gundlach's, English stand, thumb screw delicately adjusted, in fine polished mahogany case, lock and key, with strap for carrying, two eye pieces, five objectives, including one of his fine immersion lenses of very high power, slides, chamois skin, etc. \$225.00

The high reputation of this celebrated manufacturer is too well known to need any further description of the foregoing instrument; it is precisely the same make and character in every particular as the one I exhibited at the meeting of the American Association for the Advancement of Science, held at Troy, which was so favorably spoken of in the notice of their proceedings.



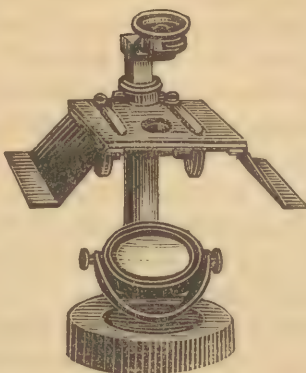
2671



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2680



2692



2693

2682.—Microscope, solar, complete, with all the appurtenances, in fine polished box, comprising colored glasses, mounted, several objectives, manufactured expressly for me by the manufacturer for the University of Vienna. \$200.00

Ditto, pocket. See Loups or Lenses.

Ditto, aplanatic, Steinheil. See Photographic Lenses.

2683.—Microscopic Covers, circles. Per doz., .35

2684.—Ditto, ditto, ditto. Per ounce, \$4.00

2685.—Ditto, ditto, square. Per doz., .30

2686.—Ditto, ditto, ditto. Per ounce, 3.00

2687.—Ditto, Slides. Per doz., .70

Minerals. See full list and description at the latter part of this book.

2688.—Mineralogists' Slates, of unglazed porcelain, for showing the streak. $2 \times 2\frac{1}{2}$, .40 $4 \times 5\frac{3}{4}$, .50 each.

Mineralogical Hammers. See Hammers.

Minim Glasses. See Graduates.

2689.—Miser's Plate. \$2.50

2690.—Mixing Capsules, of brass, for blow-piping and assay, according to size. .50 to \$1.00

Larger sizes made to order.

2691.—Ditto, ditto, horn. Each, .25

2692.—Ditto, **Bottles**, ground stoppered, carefully ground and graduated. 500 c. c., \$2.50 1000 c. c., \$3.50

2693.—Ditto, **Jars**, carefully ground and stoppered.

500 c. c., \$2.50

1000 c. c., \$4.50

- 2694.**—**Models**, of Crown Diamonds, imported to order, comprising four of the largest crown diamonds. Each, \$20.00
 Ditto, of Precious Stones, Crystals, etc. See Collections.
- Models of Mining Machinery, Tools, Furnaces, etc.**, as employed in the School of Mines at Freiburg, Saxony; duty free; imported only to order, viz:
- 2695.**—**Model**, of Arch Protector. \$6.00
- 2696.**—Ditto, amalgamating apparatus. 40.00 to 45.00
- 2697.**—Ditto, of apparatus, for the Ascent and Descent of men in a mine. 18.00 to 25.00
- 2698.**—Ditto, of deep Shaft Bucket-lift, with bucket. 7.50
- 2699.**—Ditto, of shallow Shaft and Bucket-lift, with bucket. 7.50
- 2700.**—Ditto, of iron Bucket-lift, with bucket. 18.00
- 2701.**—Ditto, of Buddle, for stamp ore. 9.00
- 2702.**—Ditto, Horse Capstan. 60.00
- 2703.**—Ditto, Miners' Cage. 3.00
- 2704.**—Ditto, Mulderhutte Cinder hoister. 37.50
- 2705.**—Ditto, Hydraulic Composing-machine. 30.00
- 2706.**—Ditto, usual form Composing-machine. 12.00
- 2707.**—Ditto, of Constructing Tools, various. 150.00 to 210.00
- 2708.**—Ditto, Patterson's Concentration Apparatus. 60.00
- 2709.**—Ditto, "Crab," for hauling and heaving vessels into dock. \$12.00
- 2710.**—Ditto, of ore.
- 2711.**—Ditto, of ore Crushing Machine, with lifter. 350.00
- 2712.**—Ditto, ditto, without lifter. 225.00
- 2713.**—Ditto, of round Buddle, for dressing stamped ore. 45.00 to 52.50
- 2714.**—Ditto, of Buddle stationary frame. 45.00 to 52.50
- 2715.**—Ditto, of cylindrical blast Bellows, in wood. 87.50
- 2716.**—Ditto, ditto, ditto, in metal. 225.00 to 315.00
- 2717.**—Ditto, of Driving Ton, for flat shaft. 2.50
- 2718.**—Ditto, of Delivery shaft. 2.50
- 2719.**—Ditto, of separating Drum for well hole. 15.00
- 2720.**—Ditto, of Drill, with drilling apparatus. 75.00 to 90.00
- 2721.**—Ditto, of steam Engine, with horizontal cylinder and paddle-wheel movement, in wood. \$45.00 to 60.00
- 2722.**—Ditto, ditto, ditto, in metal. 225.00 to 300.00
- 2723.**—Ditto, steam Engine, with working beam, in wood. \$120.00 to 150.00

| | |
|---|--------------------|
| 2724.—Model, steam Engine, in metal. | \$270.00 to 375.00 |
| 2725.—Ditto, of steam Engine, with air-condensing cylinder, in wood. | \$135.00 to 165.00 |
| 2726.—Ditto, ditto, ditto, in metal. | 250.00 to 350.00 |
| 2727.—Ditto, oscillating steam Engine, in wood. | \$150.00 to 200.00 |
| 2728.—Ditto, ditto, ditto, in metal. | \$300.00 to 450.00 |
| 2729.—Ditto, water-pressure Engine, complete. | \$150.00 to 450.00 |
| 2730.—Ditto, Extraction apparatus. | \$30.00 |
| 2731.—Ditto, of refining Forge, German. | \$15.00 |
| 2732.—Ditto, Hartz linen-covered Frame, for dressing slime. | \$18.00 |
| 2733.—Ditto, annealing Furnace, or oven. | 25.00 |
| 2734.—Ditto, assay Furnace. | 12.00 |
| 2735.—Ditto, blast Furnace, for iron. | 37.50 |
| 2736.—Ditto, cupola Furnace, with ventilator. | 37.50 |
| 2737.—Ditto, ditto, ditto, without ventilator. | 24.00 |
| 2738.—Ditto, Freiburg Furnace, with double draft. | 21.00 |
| 2739.—Ditto, ditto, lead Furnace. | 18.00 |
| 2740.—Ditto, Hartz lead Furnace. | 27.00 |
| 2741.—Ditto, puddling Furnace. | 24.00 |
| 2742.—Ditto, iron refining reverberatory Furnace. | 60.00 |
| 2743.—Ditto, reverberatory smelting Furnace. | 22.50 |
| 2744.—Ditto, English reverberatory smelting Furnace. | 60.00 |
| 2745.—Ditto, Mansfield roasting Furnace, with double draft. | 22.50 |
| 2746.—Ditto, of reverberatory Furnace, for the concentration of copper ore. | \$55.00 |
| 2747.—Ditto, of Hungarian reverberatory roasting Furnace. | 33.00 |
| 2748.—Ditto, English roasting Furnace, with four work openings. | \$35.00 |
| 2749.—Ditto, muffle roasting Furnace. | 33.00 |
| 2750.—Ditto, Furnace, for silver refining. | 27.00 |
| 2751.—Ditto, Mansfield "Spectacle" Furnace. | 12.00 |
| 2752.—Ditto, Saxony Furnace, for tin ore. | 10.00 |
| 2753.—Ditto, Furnace, for zinc ore. | 45.00 |



2726

| | |
|--|------------------|
| 2754.—Model, curved Furnace, or oven. | 12.00 |
| 2755.—Ditto, of Gold washing machine. | 30.00 |
| 2756.—Ditto, of lift Hammer, in wood. | 24.00 |
| 2757.—Ditto, ditto, ditto, in metal. | 45.00 |
| 2758.—Ditto, steam Hammer, in wood. | 37.50 |
| 2759.—Ditto, ditto, ditto, in metal. | 67.50 |
| 2760.—Ditto, forge Hammer, of wood. | 24.00 |
| 2761.—Ditto, ditto, ditto, of metal. | 40.00 |
| 2762.—Ditto, tilt Hammer. | 24.00 |
| 2763.—Ditto, of Hearth of a foot wall. | 9.00 |
| 2764.—Ditto, Freiburg refining Hearth. | 50.00 |
| 2765.—Ditto, English refining Hearth. | 30.00 |
| 2766.—Ditto, of inclined Plane, with drawing weights. | 36.00 |
| 2767.—Ditto, of Cross Lever, in wood. | 7.00 |
| 2768.—Ditto, ditto, ditto, in iron. | \$12.00 to 18.00 |
| 2769.—Ditto, of Machine, for ore washing. | 15.00 |
| 2770.—Ditto, ore Mill, with water wheel. | 125.00 |
| 2771.—Ditto, ore Mill, without “ | 100.00 |
| 2772.—Ditto, stamp Mill, for two wet and one dry charge, with wheel. | 75.00 |
| 2773.—Ditto, ditto, ditto, ditto, without wheel. | 45.00 |
| 2774.—Ditto, of rolling Mill, for bar iron, in wood. | 57.00 |
| 2775.—Ditto, ditto, ditto, in metal. | 275.00 |
| 2776.—Ditto, warm air Oven. | 15.00 |
| 2777.—Ditto, hand Pump. | 7.50 |
| 2778.—Ditto, Rail “Dog,” with truck, English. | 15.00 |
| 2779.—Ditto, ditto, ditto, without truck, Hungarian | 7.50 |
| 2780.—Ditto, plain Reel. | 6.00 |
| 2781.—Ditto, of sinking Shaft, of iron. | 37.50 |
| 2782.—Ditto, ditto, ditto, of wood. | 22.50 |
| 2783.—Ditto, ditto, ditto, with round wall. | 30.00 |
| 2784.—Ditto, upright Shaft and under-ground workings. | 225.00 |
| 2785.—Ditto, Shaft timbering, for hoisting windlass. | 12.00 |
| 2786.—Ditto, Screening, or Sifting Machine. | 40.00 |
| 2787.—Ditto, Sweep Table. | 18.00 |
| 2788.—Ditto, of “Dolly Tub.” | 2.50 |
| 2789.—Ditto, Trunks, for the precipitation of the slimes in stamping mill. | \$40.00 to 45.00 |
| 2790.—Ditto, Ventilator, as used in the Hartz mines. | 22.50 |

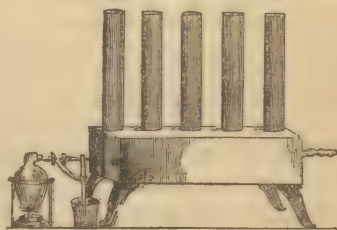
- 2791.—**Model**, Ventilator, according to Fabry's method. 75.00
 2792.—Ditto, ditto, ditto, Karsten's method. 37.50
 2793.—Ditto, under-ground working of mines, with ridging and
 stoping; also chambering and mason-work up to the deposit
 bed. \$45.00 to 60.00
 2794.—Ditto, Wheel-barrow. 3.00
 2795.—Ditto, of tread Wheel. 15.00
 2796.—Ditto, hand Windlass. 22.00
 2797.—Ditto, turning Wheel. 40.00
 2798.—Ditto, Water-wheel, Forneron's method. \$60.00 to 75.00
 2799.—Ditto, ditto, Chouvel's. 60.00 to 75.00
 2800.—Ditto, ditto, Schwamkrug's, with vertical motion. 75.00
 2801.—Ditto, ditto, overshot. 30.00
 2802.—Ditto, ditto, undershot. 22.50
 2803.—Ditto, ditto, breast. 30.00
 2804.—Ditto, ditto, for back water. 30.00
 2805.—Ditto, ditto, for drawing engine according to Schwamkrug's
 method. \$270.00
 2806.—Ditto, Water-wheel tools, as used by Schwamkrug. 235.00
 2807.—Ditto, of the two above-mentioned, in one collection. 425.00
 2808.—Ditto, Water-whim, with crate of iron. \$150.00 to 225.00
 2809.—Various models of shaft, pit, and underground timbering
 and mason-work, for mines. \$5.00 to 10.00

Other models can be made by the same manufacturers, in metal or in wood, accompanied with full drawings and descriptions.

2810.—**Monochromatic Light Apparatus**, for showing Sodium Flames, complete, with lamp, after Dr. Morton. \$12.00

2811.—**Mulders' Absorption Meter**, for determination of carbonic acid from all bases, according to Fresenius. \$5.00

Mohr's Apparatus, various, distributed under different headings throughout the Catalogue.



2810

- 2812.—**Mordaunt Cloth**, for dyers' test. Per yd., \$2.00
 2813.—**Mouth Pieces**, of horn, for blow-pipes, trumpet shape; also cylindrical and trumpet combined. Each, .25



2811

- 2814.—Mouth Pieces, cylindrical, of ivory. Each, .50
 2815.—Ditto, ditto, of turned wood, for inhaling gases, or to attach to gas bladders. Each, .25
 2816.—Ditto, ditto, of bone, for inhaling bags. Each, .25 to \$1.00



2817.—Ditto, ditto, box-wood, for nursing bottles. .25

2818.—Mortars, agate, with pestles.

| | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------------|
| 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 1 $\frac{5}{8}$ | 1 $\frac{3}{4}$ | 1 $\frac{7}{8}$ | 2 | 2 $\frac{1}{8}$ in. |
| \$1.90 | 2.00 | 2.15 | 2.20 | 2.25 | 3.00 | 3.25 each. |
| 2 $\frac{1}{4}$ | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 2 $\frac{5}{8}$ | 2 $\frac{3}{4}$ | 2 $\frac{7}{8}$ | 3 in. |
| \$3.75 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 | 7.00 " |
| 3 $\frac{1}{4}$ | 3 $\frac{1}{2}$ | 4 | 4 $\frac{1}{4}$ | 5 | 5 $\frac{1}{4}$ | 5 $\frac{1}{2}$ in. |
| \$8.50 | 9.00 | 15.00 | 17.00 | 20.00 | 25.00 | 30.00 " |

2819.—Ditto, ditto, mounted in wood. Extra. Each, \$1.00
 Ditto, diamond. See Diamond Mortars.

2820.—Mortars, glass, with lip and pestle, shape conical.

| | | | | | |
|--------|------|--------|------|------|------------|
| Nos. | 1176 | 1175 | 1174 | 1173 | 1172 |
| Size, | 3½ | 3¾ | 4¼ | 4¾ | 4½ in. |
| Price, | .75 | \$1.00 | 1.25 | 1.50 | 1.75 each. |

2821.—Ditto, hemispherical, glass, with pestle.

| | | | | |
|--|-----|-----|-----|--------------|
| | 2 | 3 | 5 | 6 in. |
| | .30 | .35 | .65 | \$1.00 each. |

2822.—Ditto, iron, bell shape.

| | | | | | | |
|-------|-----|--------|------|---------|------|------------|
| 4 oz. | 8 | 16 | 32 | ½ gall. | 1 | 2 |
| .40 | .70 | \$1.00 | 1.25 | 2.00 | 3.50 | 4.75 each. |

Ditto, iron. Other styles, special prices.

2823.—Ditto, porcelain, emulsion, with pestle and strainer.

Each, \$2.00

2824.—Ditto, ditto, with knobbed handles on either side, containing ½ gallon. Each, \$5.00

2825.—Ditto, ditto, ditto, ditto, 1 gallon. " 8.00

2826.—Ditto, ditto, ditto, ditto, 1 " emulsion, sharp lipped, and ring around the top, cover and porcelain handles. Each, \$6.50



2829



2830



2832



2834



2835



2836

2827.—Ditto, ditto, deep mixing, glazed outside.

| | | | | | | | | | |
|--------|-----|-----|-----|--------|------|------|------|------|------------|
| Nos. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Diam., | 3 | 3¼ | 4¼ | 5½ | 6 | 7 | 8 | 9¼ | in. |
| Price, | .45 | .60 | .75 | \$1.00 | 1.25 | 1.50 | 2.00 | 3.00 | 4.50 each. |

2828.—Ditto, ditto, ditto, glazed throughout.

| | | | | |
|------|-----|-----|--------|------------|
| Nos. | 0 | 1 | 4 | 6 |
| | .55 | .70 | \$1.25 | 2.50 each. |

2829.—Ditto, ditto, shallow, for powders, glazed on the outside, with or without lip.

| | | | | | | | | |
|--------|--------|------|------|------|------|------|-------------|--------------|
| Nos. | 00 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Size, | 2½ | 2¾ | 3 | 3¾ | 4½ | 5 | 5¾ | 6½ in. |
| Price, | .35 | .40 | .50 | .60 | .70 | .75 | .80 | \$1.00 each. |
| Nos. | 7 | 8 | 9 | 10 | 11 | 14 | 16 | |
| Size, | 7 | 7½ | 8¼ | 9 | 9½ | 12½ | 14¼ in. | |
| Price, | \$1.25 | 1.40 | 1.65 | 1.85 | 2.00 | 5.50 | 18.00 each. | |

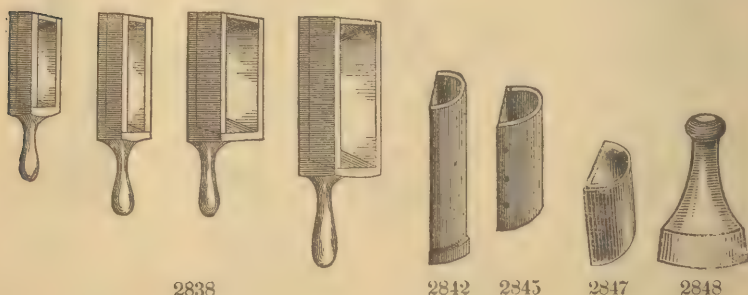
2830.—Mortars, wedgewood.

| | | | | | | | | |
|--------|--------|------|------|------|------|------|--------|------------|
| Nos. | 0000 | 000 | 00 | 0 | 1 | 2 | 3 | 4 |
| Price, | .40 | .50 | .55 | .65 | .70 | .90 | \$1.10 | 1.40 each. |
| Nos. | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Price, | \$1.70 | 2.00 | 2.50 | 3.50 | 4.00 | 4.50 | 5.25 | 6.00 “ |

2831.—Ditto, steel polished inside and out.

3 inches, \$2.00

6 inches, 5.00 each.

2832.—Moulds, of boxwood, for rolling the paper for cartridge cases in blow-piping. Each, .20**2833.—Ditto, ditto, with pestle, for forming clay basins in blow-piping.** Each, .75**2834.—Ditto, brass, for making charcoal crucibles in quantitative blow-pipe analysis, in four pieces.** Each, \$4.25**2835.—Ditto, ditto, for making cupels.** Each, \$2.50 to 4.50**2836.—Ditto, ditto, for making scorifiers.** “ 5.00 to 7.00**2837.—Ditto, charcoal of wood, for forming oblong charcoal pieces.** Each, \$1.25**2838.—Ditto, iron, for making gold and silver ingots.**

Each, \$1.50 to 2.50

2839.—Ditto, steel, for cupelling before the blow-pipe, two sizes and two pestles, with support. Each, \$2.75**2840.—Ditto, suppository.** “ 7.50**2841.—Muffles, sand, large.** “ 1.50**2842.—Ditto, ditto, ditto, for Hibb's furnaces, fire clay.** “ 1.25**2843.—Ditto, ditto, for Kent's furnaces, round ends.** “ .35**2844.—Ditto, French, thin and strong, No. 5, $2\frac{3}{4} \times 3\frac{1}{2}$.** “ .30**2845.—Ditto, ditto, ditto, No. 6, $2\frac{7}{8} \times 3\frac{3}{4}$.** “ .35**2846.—Ditto, ditto, ditto, No. 7, $3 \times 4\frac{1}{8}$.** “ .45

2847.—Muffles, French clay, best.

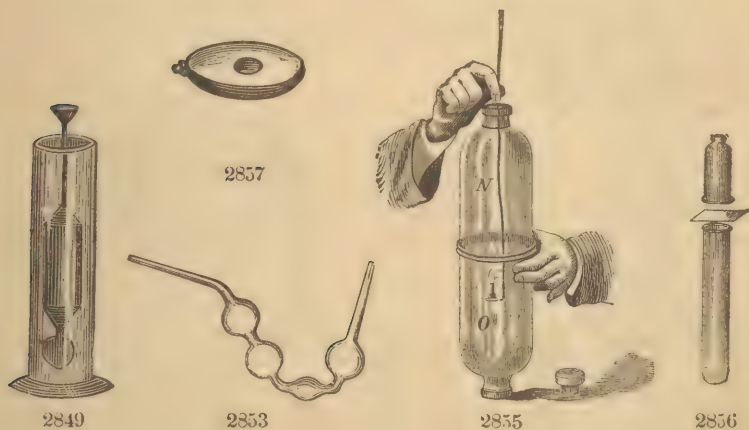
| A | B | C | D | E | F | G | H | I |
|----|----|----|----|----|----|----|----|----|
| 3 | 3½ | 4¾ | 3¼ | 4½ | 4¼ | 4¾ | 4¾ | 3½ |
| 3½ | 4¼ | 5 | 4¾ | 5½ | 6 | 6¼ | 7½ | 4½ |
| 4¾ | 6 | 6¼ | 7¼ | 7¾ | 8 | 8½ | 10 | 11 |

Price, .50 .60 .70 .75 \$1.00 1.10 1.20 1.50 2.00 each.

2848.—Mullers, Glass. 3 in., \$1.25 4 in., 2.25.

Slabs for above. See Plates.

Ditto, Agate. See Agate Slabs, with Muller.



2849.—Nicholson's Hydrometers, for ascertaining Specific Gravity of solids, minerals, etc., made of brass. Each, \$4.00

2850.—Ditto, ditto, ditto, including jar. " 6.00

2851.—Ditto, ditto, ditto, of tin. " 2.00

2852.—Nitrogen Bulb, Will & Varrentrapp's, 3 bulbs. " .65

2853.—Ditto, ditto, ditto, 4 " " .75

2854.—Ditto, Limbs, Liebig's, for connection. " .75

2855.—Nitrous Oxide Gas, apparatus for forming. " 3.50

2856.—Ditto, ditto, ditto, smaller. " 2.50

Nipper Taps. See Pinch Cocks.

2857.—Nipple Shells, French, with ring. Per doz., 4.50

2858.—Nursing Bottles, ditto. Per doz., \$1.25

2859.—Ditto, ditto, corks. Per doz., \$.50

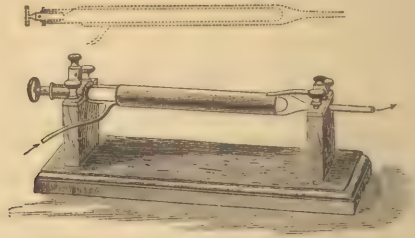
2860.—Ditto, ditto, tops, box-wood. Per doz., \$1.00



2858



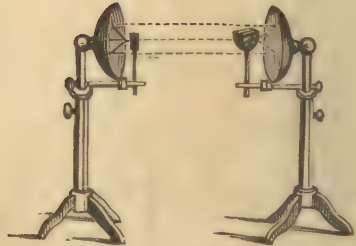
2861



2862



2865



2878

2861.—Oil Receivers, Florentine.

Pints, .75

quarts, \$1.00 each.

Organic Analysis. See Apparatus for.**Optical Apparatus.** See Optics.**Oxygen Retorts.** See Gas Generators.**Oxhydrogen Blow-pipe.** See Blow-pipe.**2862.—Ozonometer, Sieman's.**

2863.—Ditto, to attach to the new Borchard electrical machine.
for collecting ozon \$6.00

2864.—Page's Rotating Apparatus. 16.00

2865.—Ditto, Revolving Electro-Magnet. 8.00

2866.—Paper, bibulous. Per bundle of 1000 sheets, 4.50

Ditto, filtering. See Filtering Paper.

2867.—Ditto, glazed. Per sheet, .05 ; per quire, .75

2868.—Ditto, litmus. Per sheet, .05

2869.—Ditto, neutral. " .05

2870.—Ditto, parchment. " .25

2871.—Ditto, tea, No. 1. Per quire, .10

- 2872.—**Paper**, tumeric. Per sheet, .05
 2873.—Ditto, weights .50
 2874.—**Pallettes**, small. Each, .25
 2875.—Ditto, large. “ .30
 2876.—**Pans**, expectorating. “ .25
 2877.—Ditto, for gold washing. “ .50
 Ditto, horn. See Horn Pans.
 2878.—**Parabolic Reflectors**.
 13 in., \$16.00 15 in., 25.00 10 in., 13.00
 2879.—Ditto, ditto, nickleized or silvered, additional. \$2.50



2880



2881



2881



2882



2884

- 2880.—**Perculators**, Mohr's glass and tin. Each, \$8.00
 2881.—Ditto, of glass. Pints, .50 gall., \$1.00 each.
 See also Displacement Apparatus.
 2882.—**Perfume Bottles**, French, fancy shaped, ground, stop-
 pered with ball top. Per 100, \$7.50
 2883.—Ditto, ditto, amber and blue diamond, pressed, 1 oz. Ea. .40
 2884.—Ditto, ditto, ditto, pressed, ball stopper. “ .50
 2885.—Ditto, ditto, green, cut crystal glass. “ 3.00
 2886.—Ditto, ditto, square, crystal, cut top. Per doz., 6.00
 2887.—**Pestles**, porcelain. Each, .50
 2888.—**Photometers**, Bunsen's, graduated, 5 foot bar, with scale,
 diaphragm and candle holders. Each, \$30.00
 2889.—Ditto, regulation burner. “ 5.00
 2890.—Ditto, candles. Per lb., .75
 Ditto, Meter. See Gas Meter.



2888

- 2891.—Photographic Baths, porcelain, small. Each, \$4.00
 2892.—Ditto, ditto, ditto, large. " 5.00
 2893.—Ditto, Dishes, porcelain, shallow, with lip, Royal Berlin, 9 inches. Each. \$2.75
 2894.—Pill Boxes, for rounding and silvering pills. " .75
 2895.—Ditto, tiles.

| | | |
|-----|-----|-----------|
| 5 | 6 | 7 in. |
| .40 | .50 | .75 each. |

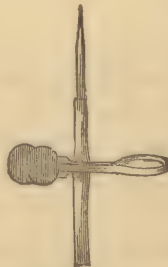
- 2896.—Pincers, gas, with corrugated jaws, for handling gas and other pipes, with screw driver on handles. \$1.00 to 1.50



2897



2898



2899



2900



2901

- 2897.—Pinch Cocks, Mohr's, brass.

Small, .25 large, .35 each.

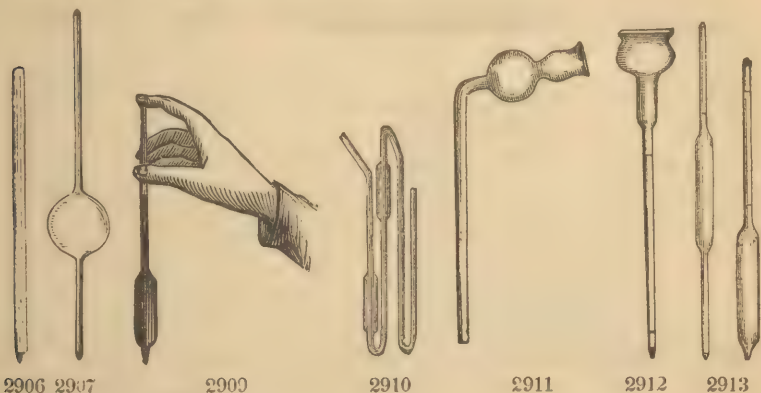
- 2898.—Ditto, ditto, with bent lip and screw, to regulate the flow of liquids.

| | | | |
|--------|-----|-----|-----------|
| Nos. 1 | 2 | 3 | 4 |
| .30 | .40 | .50 | .60 each. |

- 2899.—Ditto, ditto, with rubber attachment and glass tips.

Small, .35 large, .65 each.

- 2900.—Pinch Cocks, Mohr's, with steel spring and heavy plate brass, with steel bow, having number and register screw in fractions to regulate the drops, in careful estimation. Ea. \$1.75
 2901.—Ditto, ditto, brass wire, with protecting plate. " .25
 2902.—Ditto, ditto, Bunsen's. Per doz., 7.50
 2903.—Ditto, ditto, Dr. Squibb's modification, arranged to employ but one screw. Each, .50
 2904.—Pipes, for hydrogen bubbles. " .75
 2905.—Ditto, organ; special prices.



- 2906.—Pipettes, straight, 6 in. long, drawn to the end. Each, .10; per doz., \$1.00
 2907.—Ditto, cylindrical, or ball. Each, .25
 2908.—Ditto, with rubber ball, plain. " .50
 2909.—Ditto, fixed, or volume.

| | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
| 1 | 2 | 5 | 10 | 20 | 25 | 30 | 50 | 75 | 100 | 150 | 200 cc. |
| .15 | .20 | .25 | .30 | .35 | .40 | .45 | .50 | .65 | .85 | .90 | \$1.00 each. |

 2910.—Ditto, Etting's. Each, .75
 2911.—Ditto, filling. " \$1.00
 2912.—Ditto, dropping, graduated, 100 in 10. .75
 2913.—Ditto, Mohr's, graduated.

| | | | | | | |
|----------------|----------------|---------------|---------------|----------------|----------------|----------------|
| 5 | 5 | 10 | 10 | 10 | 15 | 20 cc. |
| $\frac{1}{10}$ | $\frac{1}{20}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{20}$ | $\frac{1}{10}$ | $\frac{1}{10}$ |
| .70 | .75 | .75 | .90 | \$1.00 | 1.10 | 1.15 each. |
| 25 | 25 | 30 | 50 | 50 | 100 | 100 cc. |
| $\frac{1}{8}$ | $\frac{1}{10}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{10}$ | 1 | $\frac{1}{2}$ |
| \$1.15 | 1.20 | 1.20 | 1.35 | 1.40 | 2.00 | 2.50 each. |

 2914.—Ditto, ditto, graduated from 0° to 5°, 0° to 10°.

| | | | | | |
|---------------------|--------|-------------------|-----|-------------------|-----------|
| 1 in $\frac{1}{10}$ | \$1.00 | in $\frac{1}{10}$ | .75 | in $\frac{1}{10}$ | .85 each. |
| 1 in $\frac{1}{16}$ | .75 | | | | |

- 2915.—Pith Balls, per dozen. .25
 2916.—Ditto, Birds, “ \$1.25
 2917.—Ditto, Images, per pair. .75
 2918.—Plates, brass sliding rod, hook and check screw. Ea. 5.50
 2919.—Ditto, earthen, glazed, 6 inch. “ .25



2920



2925



2924



2926



2928



2933



2934

- 2920.—Ditto, ditto, perforated, with rim around the top, flat.

| | | | |
|-----|-----|-----|-----------|
| 3 | 4 | 4½ | 5 in. |
| .25 | .30 | .35 | .40 each. |

Ditto, glass. See Covers and Glass Plates.

- 2921.—Ditto, porcelain, deep, rectangular. Each, 1.25

- 2922.—Ditto, ditto, for arsenic and color tests, assorted sizes.

Each, .50 to \$1.00

- 2923.—Ditto, porcelain, perforated. Small, .90; large, \$1.00

- 2924.—Ditto, porous, square.

| | | | |
|-----|-----|-----|-----------|
| 4½ | 4¾ | 5¼ | 5½ in. |
| .40 | .45 | .50 | .55 each. |

- 2925.—Platinum Dishes.

| | | | | | | | |
|---|---|---|---|---|-------|------------|----|
| ½ | ¾ | 1 | 2 | 3 | 4 oz. | Per grain, | .3 |
|---|---|---|---|---|-------|------------|----|

- 2926.—Ditto, Boats, for combustion.

| | | | | |
|----|----|--------|---|----|
| 2¾ | 2⅞ | 3½ in. | “ | .3 |
|----|----|--------|---|----|

- 2927.—Ditto, Spatulas.

| | | | | | | |
|----|----|----|----|--------|---|----|
| 3⅞ | 3¼ | 3½ | 3⅞ | 4½ in. | “ | .3 |
|----|----|----|----|--------|---|----|

- 2928.—Ditto, Spoons, with or without covers; 2 sizes, “ .3

- 2929.—Ditto, Scrap. “ .1½

- 2930.—Ditto, Sponges, German. Each, .30

- 2931.—Ditto, ditto, French. “ 75

Ditto, spongy. See Chemicals.

- 2932.—Ditto, Jets or Tips. Each, .75 to \$1.00

- 2933.—Ditto, End Tongs, steel, double bend. Each, 6.00

- 2934.—Ditto, ditto, German silver, double or single bend. “ 6.50

Platinum Retorts, special prices.

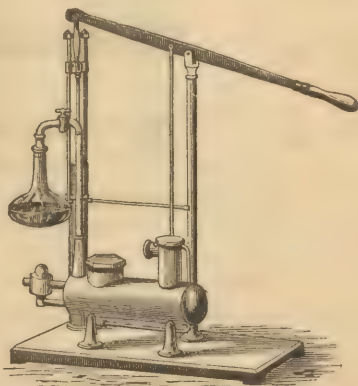
- 2935.—Ditto, **Sheet and Foil**, ordinary size and thickness. Per grain, $.2\frac{1}{2}$
- 2936.—Ditto, wire, ditto, ditto, fine as hair. Per foot, .25
- 2937.—Ditto, **Foil**, very thin for batteries. Per grain, $3\frac{1}{2}$
- 2938.—Ditto, **Wire**, for blow-pipe. Per foot .30 to .60
- Ditto, ditto, and **Foil Gauze**.



2939, 2940



2941

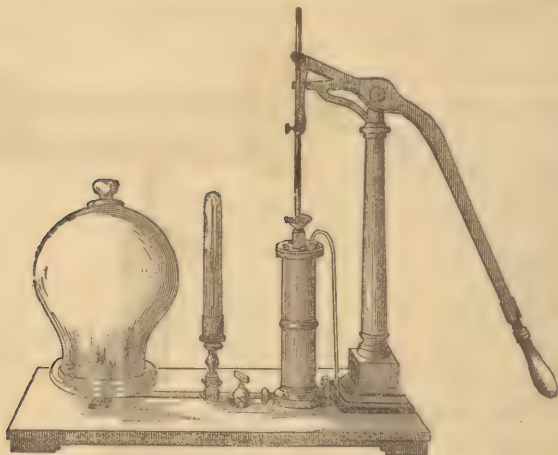


2945

- 2939.—Ditto, **Covers**. $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$, $1\frac{5}{8}$, $1\frac{3}{4}$, $1\frac{7}{8}$, 2 in. Per grain, .3
- 2940.—Ditto, **Crucibles**. $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, 2, 3 oz., and larger sizes, special to order. Per grain, .3
- 2941.—**Pliers**, steel wire, round ends, square ends, and cutting ends. Each, \$1.00 to 1.25

Pneumatic Apparatus. See the end of the book.

- 2942.—Ditto, **Cistern**. \$12.00
- 2943.—Ditto, **Pumps**, Sprengel's mercurial, of glass, in fine polished walnut frame, French make. This article being excessively frail and delicate, is only imported on special order, with deposit, and at the risk of the purchaser. Each, \$150.00
- 2944.—Ditto, ditto, or lever Air pump, heavy, hard wood frame, 40 inches high, barrel $12 \times 3\frac{1}{4}$ inches, and plate 12 inches in diameter, with manometer attached. Each, \$200.00
- 2945.—Ditto, ditto, ditto, Carré's, with separate arrangements, for exhausting air and freezing water on same apparatus. Each, \$150.00



2946

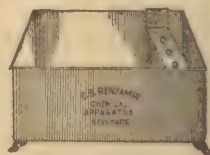
- 2946.—**Pneumatic Pump**, on flat base: barrel $8 \times 2\frac{1}{4}$ inches; plate 10 inches diameter, with manometer. Each \$100.00
- 2947.—Ditto, ditto, with cylinder, $7\frac{1}{2} \times 2\frac{1}{2}$ inches, and plate 8 inches diameter, barrel placed vertically. Each, \$50.00
- 2948.—Ditto, ditto, barrel $7 \times 1\frac{1}{2}$ inches, plate $7\frac{1}{2}$ inches diameter. Each, \$25.00



2951



2952



2955



2956

- 2949.—Ditto, ditto, barrel, 7×1 inches; plate, 6 inches diameter. Each, \$18.00
- 2950.—Ditto, ditto, without any stopcock. " 15.00
- 2951.—Ditto, ditto, not mounted, for organic analysis. " 10.00
- 2952.—Ditto, ditto, " " 15.00

2953.—Pneumatic Trough, of tin, japanned, 9x12½, with shelf
\$2.75

2954.—Ditto, ditto, ditto,
11x15 in., with shelf.

\$3.50

2955.—Ditto, ditto, ditto,
13x16 x12 in., with
shelf.

\$5.00

2956.—Ditto, ditto, of best
annealed glass, with-
out a joint, without
shelf, 10x5 in.

\$4.50

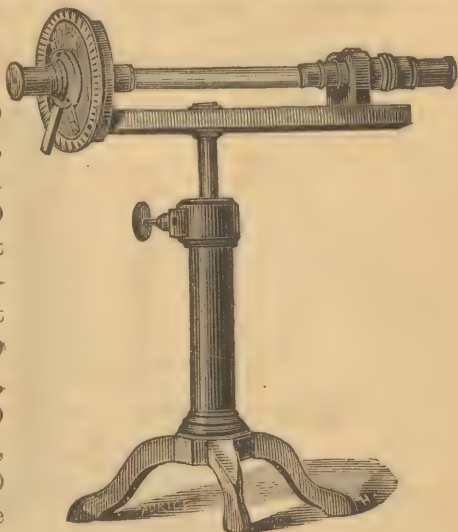
2957.—Ditto, ditto, ditto,
ditto, 12x6 in.

\$7.00

2958.—Ditto, ditto, ditto,
ditto, 14x7 in.

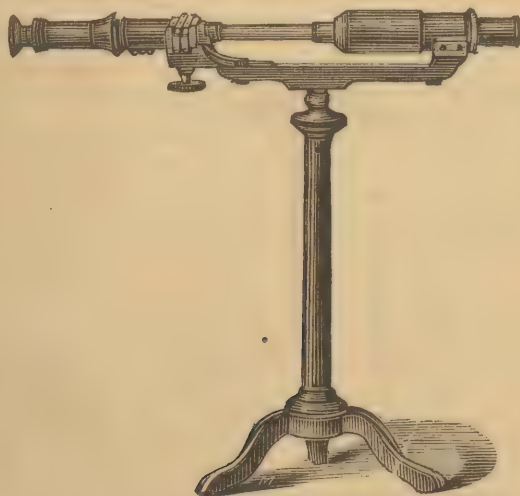
\$8.50

Polariscope. See
Turmaline Pincers.



2959

2959.—Polarization Apparatus, Mitscherlich's, carefully con-
structed, on a metallic stand, double tubes. \$60.00



2961

2960.—Ditto, ditto, Wild's, for the examination of sugars, syrups,
and beet sugar, in a fine polished mahogany case, with tubes,
lamps, etc., complete. \$175.00

2961.—Ditto, ditto, Soleil's, of finely polished brass, with three



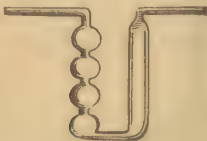
2962

tubes, complete, in a fine polished mahogany box, lock, key, etc., with instructions. \$150.00

2962.—Ditto, ditto, according to Soleil-Ventzke, with microscope for the micrometer scale, 1 tube 100 millimeters, and 1 tube 200 millimeters; complete, with the apparatus and instructions which usually come with this instrument; also having Dr. Scheibler's attestation as to its accuracy, it having been thoroughly tested by him. \$225.00



2964



2965



2966



2968

2963.—Ditto, ditto, Norremberg's, for the analyzing of light. Imported only to order. \$60.00

Pressure Boards. See Gas Bags.

2964.—Pomades, glass. 1 oz., \$1.25 2 oz., 1.50.

Ditto, porcelain. See Jars.

Porous Cups. See Cells.

Ditto, Plates. See Plates.

- 2965.—Potash Bulbs, Mitscherlich's. Each, .60
 2966.—Ditto, ditto, Liebig's latest form. " .75
 2967.—Ditto, ditto, Mohr's. " .90
 2968.—Ditto, ditto, Geissler's. " \$1.00



2969



2970



2971



2973



2976

2969.—Ditto, Pipettes. Each, .30

2970.—Precipitating Glasses.

| | | | | | |
|-----|-----|-----|--------|---------------|--------------|
| 4 | 8 | 16 | 32 oz. | $\frac{1}{2}$ | 1 gall. |
| .25 | .30 | .40 | .60 | .80 | \$1.10 each. |

2971.—Preparation Glasses, flat bottom, thin glass.

| | | | |
|-------------------|-------------------|-------------------|-----------------------|
| 6x1 $\frac{1}{4}$ | 7x1 $\frac{3}{8}$ | 7x1 $\frac{1}{2}$ | 8x1 $\frac{1}{2}$ in. |
| \$1.25 | 1.40 | 1.50 | 2.00 per doz. |

2972.—Ditto, ditto, round bottom. See Specimen Tubes.

Ditto, Jars. See Jars for Analytical purposes.

2973.—Prisms, hollow bottle, 60 deg. angle. Each, 7.50

2974.—Ditto, ditto, extra fine, ground, of one piece of glass, and carefully stoppered, by Steinheil. Each, \$50.00

2975.—Ditto, ditto, mounted in brass, on stand. " 15.00

2976.—Ditto, ditto, series of 3, mounted. " 30.00

2977.—Ditto, flint glass, 3 in. " .75

2978.—Ditto, ditto, 4 in. " 1.10

2979.—Ditto, ditto, 5 in. " 2.00

2980.—Ditto, ditto, 6 in. " 3.00

2981.—Ditto, for dark chamber, 15 lines. " 2.00

2982.—Ditto, " " 21 " " 2.50

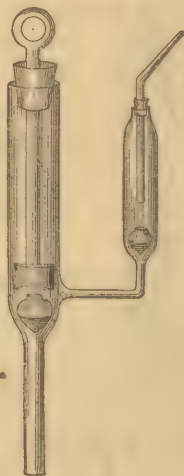
| | |
|---|-----------------------|
| 2983.—Prisms, acromatic, 30x27 m. m. | Per pair, 5.00 |
| 2984.—Ditto, ditto, 35x32 “ | “ 6.00 |
| 2985.—Ditto, ditto, 40x38 “ | “ 7.25 |
| 2986.—Ditto, ditto, 45x43 “ | “ 9.00 |
| 2987.—Ditto, equilateral flint, 33x30 m. m. | Each, 4.00 |
| 2988.—Ditto, ditto, 35x33 “ | “ 5.00 |
| 2989.—Ditto, Nicol's assortment. | Each, \$6.00 to 10.00 |



2990



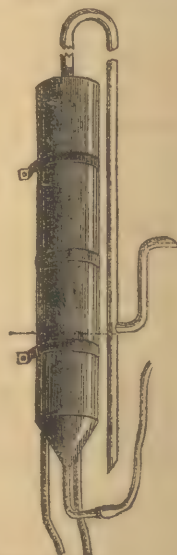
2993



2994



2992



2995

- 2990.—Proof Glasses. \$Each, 1.25
- 2991.—Punch Sticks, with porcelain ends, for crushing crystals in deep vessels, etc. Each, .25
- 2992.—Pulse Glasses. (See also Water Hammer.) Each, .50
- 2993.—Pumps, glass model, for lifting. “ \$1.50
- 2994.—Ditto, ditto, for forcing and lifting. “ 1.50
- 2995.—Ditto, Hydraulic, for blowing, by barometric pressure. Each, \$30.00
- 2996.—Ditto, glass apparatus, for showing the principle of the forcing pump as applied to the fire engine. Each, \$5.00
- 2997.—Ditto, Bunsen's quick filtering apparatus, consisting of pump, platinum cone, mould and holder, set of funnels, bottles and support. Complete, \$18.00
- 2998.—Pungents, white, or large open mouthed, ground, stoppered bottles. 1 oz., \$4.50 2 oz., 5.00 per doz.



2999.—Pungents, amber, large open mouthed.

1 oz., \$4.50 2 oz., 5.00 per doz.

3000.—Ditto, cut glass, with ground stopper and hinged silver caps, assorted colors. No. 1, \$20.00; No. 3, 35.00 per doz.

3001.—Ditto, cut glass, union or double ends; one end hinged and the other screw, silver top, assorted colors.

No. 1, \$35.00 No. 3, 45.00 each.

3002.—Ditto, ditto, ditto, gold plated on silver.

No. 1, \$45.00 No. 2, 65.00 each.

3003.—Ditto, cut glass, with ground stopper, and hinged caps, gold plated on silver.

No. 1, \$25.00 No. 3, 40.00 per doz.

3004.—Pyrometers, on mahogany base, with dial and needle, spirit lamp, brass and iron rods. Each, \$6.00

3005.—Ditto, ditto, larger, with spirit reservoir of brass, running the whole length of the apparatus, for heating the rods uniformly, having sliding cap to shut off the flame. \$12.00

Quetschhahne. See Pinch cocks.

Quick Filtering Apparatus. See Filtering Apparatus.

Quilled Receivers. See Receivers.

3006.—Radiator, Leslie's. \$2.50

3007.—Rasps, round, for filing corks.

| | | | | |
|-----|-----|-----|-----|-----------|
| 4 | 5 | 6 | 7 | 8 in. |
| .25 | .30 | .40 | .45 | .50 each. |

Reagents. See Chemicals at the back of the book.

3008.—Reagent Boxes, for sets of 9 reagents, filled. Each, 2.50

3009.—Ditto, ditto, ditto, having places for blow-pipe, platinum box, tweezers, etc., filled. Each, \$4.00

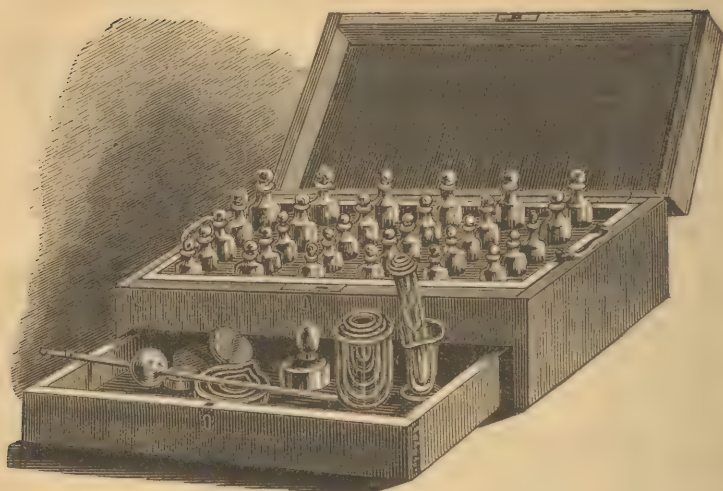
3010.—Ditto, ditto, including blow-pipe, tweezers, etc. " 6.00

3011.—Ditto, Chests, medium size. " 10.00

3012.—Ditto, ditto, large. " 12.00

3013.—Receivers, for retorts, plain, genuine Bohemian glass.

| | | |
|--------|------|------------|
| 2 | 2½ | 5 galls. |
| \$2.00 | 3.50 | 5.00 each. |



3012

3014.—Receivers, for retorts, tubulated, unstoppered.

| | | |
|-----|-----|-----------|
| 8 | 16 | 32 oz. |
| .45 | .55 | .70 each. |

3015.—Ditto, Bohemian glass, quilled.

| | | | | |
|-------|-----|--------|---------------------|------------|
| 8 oz. | 16 | 32 | $\frac{1}{2}$ gall. | 1 |
| .70 | .80 | \$1.20 | 1.70 | 2.00 each. |

3016.—Ditto, glass, tubulated and stoppered.

| | | | | | | |
|-------|-----|-----|-----|-----|---------------------|------------|
| 2 oz. | 4 | 8 | 16 | 32 | $\frac{1}{2}$ gall. | 1 |
| .30 | .40 | .50 | .60 | .75 | \$1.00 | 1.50 each. |



3013



3014



3015



3016



3018

3017.—Ditto, spherical, long-necked and ring top, tubulatures at the side, of Bohemian glass.

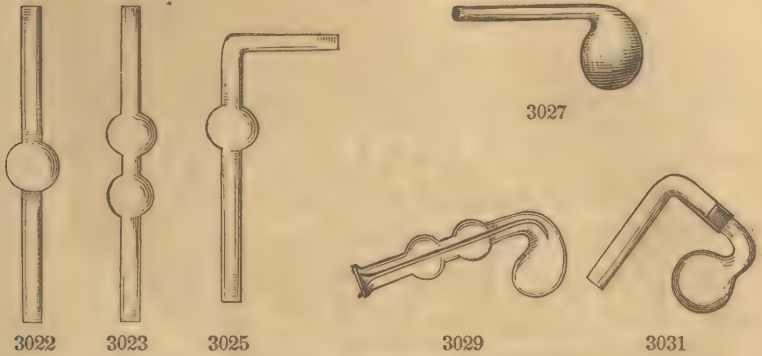
| | | |
|---------------|------|------------|
| $\frac{1}{2}$ | 1 | 2 gall. |
| \$2.00 | 3.00 | 4.00 each. |

3018.—Ditto, Florentine, French, plain, quarts. Each, .75

3019.—Ditto, ditto, Bohemian, with ground glass stopper in neck.

| | | |
|--------|---------------------|------------|
| 1 qt. | $\frac{1}{2}$ gall. | 1 |
| \$1.50 | 2.25 | 2.50 each. |

- 3020.**—Receivers, porcelain. 4 oz., \$1.25 8 oz., 1.50 each.
3021.—Ditto, earthen-ware, $\frac{1}{2}$ gall. Each, \$1.25.



- 3022.**—Reduction Tubes, of glass, with 1 bulb. Each .20
3023.—Ditto, ditto, ditto, 2 " " .30
3024.—Ditto, ditto, ditto, 3 " " .50
3025.—Ditto, ditto, ditto, 1 " bent end." .25
3026.—Ditto, ditto, porcelain, for reduction by hydrogen. " 1.25

Reflectors. See Parabolic Reflectors.

- 3027.**—Retorts, plain glass, single tube, best Bohemian glass.
 1 oz. 2 4 8 16 32 $\frac{1}{2}$ gall. 2 4 7.
 .20 .25 .30 .40 .45 .60 .90 \$2.25 3.50 6.00 each.

- 3028.**—Ditto, ditto, ditto, with double tube, Liebig's.
 8 oz., .80 16 oz., \$1.00 each.

- 3029.**—Retort Glass, plain Bohemian, two bulbs in the neck, for preparing oxygen gas from red oxide of mercury.
 2 4 6 oz.
 .30 .35 .55 each.

- 3030.**—Retorts, glass, light, French tubulature, without stopper.
 1 oz., .12 2 oz., .15 each.

- 3031.**—Ditto, ditto, Clark's, plain, with tube receiver. Each, .50
3032.—Ditto, ditto, Faraday's. " .50



- 3033.**—Ditto, ditto, best Bohemian, tubulatured and stoppered.
 2 oz. 4 8 16 32 $\frac{1}{2}$ gall. 1 3 4 5 7
 .35 .40 .50 .55 .70 \$1.20 1.50 3.50 4.50 7.00 9.00 each.

3034.—Retorts, porcelain, best, glazed inside, tubulated and stoppered.

| | | |
|--------|------|------------|
| 4 | 8 | 16 oz. |
| \$1.40 | 1.65 | 1.90 each. |

3035.—Ditto, ditto, detached heads. Each, \$1.50

3036.—Ditto, glass, German, for micro-chemical operations, plain, assorted sizes. Per doz., \$2.50

3037.—Ditto, tubulated and stoppered. " 3.50

Retort Funnels. See Funnels.

3038.—Retorts, stoneware.

| | | | |
|--------|------|------|------------|
| 4 | 8 | 16 | 32 oz. |
| \$1.00 | 1.25 | 1.50 | 2.00 each. |

3039.—Ditto, iron, loose cover.

| | | | | | | |
|---------------|------|------|------|------|------|-------------|
| $\frac{1}{2}$ | 1 | 2 | 3 | 4 | 8 | 16 pts. |
| \$2.75 | 3.00 | 3.75 | 4.25 | 5.00 | 6.50 | 10.00 each. |



3040



3045



3053



3059

3040.—Ditto, copper, loose heads, ground and fastened with clamp for making oxygen. 1 qt., \$4.50 2 qts., 6.00 each.

3041.—Ditto lead, for making hydrofluoric acid. Each, \$5 to 25.00

3042.—Ditto, platinum, according to size.

Per gramme, .40 to .45

Ditto, holders. See Supports.

Revolving Electro-Magnet. See Magnet.

3043.—Riders, of aluminum. Each, .75

Ring Burners, various kinds. See Burners.

3044.—Rings, concentric, sets of 7. .80

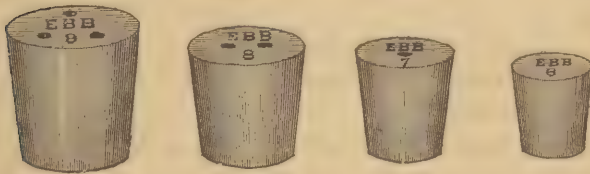
Ditto, of straw. See Straw Rings.

3045.—Roasting Dishes, according to size. Per 100, \$7.50 to 10.50

3046.—Roasts, Plattner's, used in quantitative analysis of metallic ores before the blow-pipe. Each, \$2.00

3047.—Roasting Charcoal, pieces. Per doz., .75

- 3048.—Roasting Charcoal**, forms for making, complete. Per doz., \$3.75
- 3049.—Rods**, of glass, for electric excitation. Each, 1.00
- 3050.—Ditto**, ditto, ordinary, assorted sizes. Per lb., .60
- 3051.—Ditto**, ditto, extra large, Bohemian, or French, assorted sizes Per lb., \$1.00
- Ditto, ditto, stirring. See Stirrers.
- 3052.—Rod of Shellac**, for resinous excitation. 2.00
- 3053.—Rubber Balls.** Small, \$5.00 large, 6.50 Per doz.,
- 3054.—Rubber Finger Tips**, for protecting fingers in handling acids and poisonous substances in the laboratory and in the dissecting room; thin, and of the very best quality. Each, .10
- 3055.—Rubber**, sheet, French, thin.
 No. 8, .50 No. 11, .60 per oz.
- 3056.—Ditto**, stoppers, American, solid.
 Nos. 5½ 5 4 3 2½ 2 1
 \$1.50 1.50 2.25 3.75 5.00 6.00 9.00 per 100.
- 3057.—Ditto**, ditto, of best French, flexible unvulcanizedgum, each cork accurately conical and perfectly smooth, cast in my own moulds, solid, 1, 2, and 3 holes.
 Nos. 1 2 3 4 5 6 7 8 9 10 11 12
 .08 .09 .10 .15 .20 .25 .30 .35 .50 .60 .65 .75 each.
 Or \$9.00 per lb.



3057

| | | | | | |
|--------|----|---|----|---|----|
| No. 9, | 1⅞ | x | 1⅞ | x | 1⅞ |
| “ 8, | 1¼ | x | 1¼ | x | 1¼ |
| “ 7, | 1½ | x | 1½ | x | ¾ |
| “ 6, | 1⅞ | x | 1½ | x | 1⅞ |

Other numbers, sizes in proportion to above.

- 3058.—Ditto**, ditto, ditto, in the form of Whipstock, to cut off, as required. Each, \$10.00
- 3059.—Ditto**, Syphon Primers. See Rubber Tubing. “ 1.50
- 3060.—Ditto**, Urinals. “ 1.00
- 3061.—Rupert Drops.** Per doz., .50



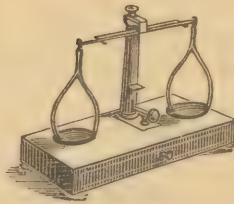
3062



3082



3066



3075



3069



3079



3064

3062.—Russian Spirit Lamps. Each, \$2.00

Saccharimeters. See Polarization.

Saccharometers. See Hydrometry.

Safety Funnels. See Funnel Tubes.

Ditto, Lamps. See Davy's.

3063.—Salometers. " 1.25

3064.—Sand Baths, cast iron, with handles 8½ to 9 in. " 2.25

3065.—Ditto, ditto, spun, best, French, deep, very stout.

| | | | |
|-----|-----|-----|-----------|
| 4 | 5 | 6 | 7 in. |
| .40 | .50 | .60 | .75 each. |

3066.—Ditto, ditto, shallow.

| | | | | |
|-----|-----|-----|-----|-----------|
| 2 | 3 | 4 | 5 | 6 in. |
| .20 | .25 | .30 | .35 | .40 each. |

3067.—Ditto, ditto, copper, 3, 4, 5, and 6 inches. Per inch, .10

3068.—Ditto, Glasses, for mariners, wood.

| | |
|--------------------|------------------|
| 15 seconds, \$1.25 | 30 seconds, 1.50 |
|--------------------|------------------|

3069.—Ditto, ditto, small, of wood, 3, 5, 10 minutes. Each, .50

3070.—Ditto, ditto, of brass, small, 5 minutes. " .75

3071.—Saw, small, with cocoa handle. .75

3072.—Scales, apothecaries, with brass beams and horn pans, without pedestal.

| | | | | | |
|--------|------|------|------|------|-------------|
| 4 | 4½ | 5 | 6 | 7 | 8 in. beam. |
| \$1.40 | 1.50 | 1.85 | 2.10 | 3.00 | 4.00 each. |

3073.—Ditto, ditto, with brass pans.

| | | |
|--------|------|-------------|
| 4 | 5 | 6 in. beam. |
| \$1.00 | 1.25 | 1.50 each. |

3074.—Ditto, ivory, for measuring the button in assay accurately.

Each, \$5.00

3075.—Ditto, prescription, various. 5.00 to 20.00

3076.—Ditto, small, in tin boxes, with weights. Each, 1.25

3077.—Scales, prescription, in morocco cases. Each, \$1.25

3078.—Scale Pans, of horn, adjusted with silk cord.

| | | | | | | | | | |
|--------|-----------------|-----|-----------------|-----|-----------------|--------|-----------------|-----------------|---------------------|
| Nos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Diam., | 1 $\frac{3}{4}$ | 2 | 2 $\frac{1}{2}$ | 3 | 3 $\frac{1}{2}$ | 4 | 4 $\frac{1}{4}$ | 4 $\frac{1}{2}$ | 5 $\frac{1}{4}$ in. |
| Price, | .40 | .50 | .65 | .75 | .90 | \$1.25 | 1.45 | 1.75 | 2.00 each. |

See also Balances, page 17.

3079.—Schuster's Dropping Flasks, stoppered. Each, .25

3080.—Scissors. Each, .50 to \$1.00

3081.—Ditto, tinsmiths', for cutting metals. " 2.50

3082.—Scoops, of horn. " .12

3083.—Scorifiers, Freiburg usual form. Per 100, 3.50

3084.—Ditto, ditto, urn shape. " 20.00

3085.—Ditto, holders, of iron, with 9 partitions, for holding scorifiers, when various assays are under examination together.

Each, \$1.50

3086.—Scorifying Moulds, of cast iron, with 9 small round cavities

Each, \$1.00

Scorifier Moulds. See Moulds.

Ditto, Tongs. See Tongs.

3087.—Scratch Brushes, or Button Brushes, for use in assay, of hard bristles.

3088.—Ditto, Brush Wire,

Per lb., \$5.00

3089.—Screen, of iron wire, to surround the Bunsen or spirit lamp, when burning under a tripod, to protect the flame from currents of air.

Each, \$1.00

3090.—Screws, brass head.

" .10

3091.—Seidlitz Powder Cups, with partitions. " .60

Sets of chemical apparatus for beginners. See the back of the book.

Separatory Bottles. See Bottles.

Ditto, Funnels. See Funnels.

3092.—Shades, Lilly, for covering rare objects. Each, \$2 to 15.00

3093.—Sharpeners, for knives. " .50

3094.—Sieves, brass, 10, 20, 30, 40, 50, 60, 80, 100 meshes to the inch; 5 inches. Each, .50 to \$1.25

3095.—Ditto, ditto, ditto, 7 inches. " .75 to 1.50

3096.—Ditto, ditto, ditto, 12 " " 1.00 to 2.00

3097.—Ditto, horse hair. " 1.25



3086



3091

3098.—Sieves, silk bolting cloth, small, French.

| | | | |
|-----|-----|--------|------------|
| 3 | 4 | 5 | 6 in. |
| .50 | .75 | \$1.00 | 1.50 each. |

3099.—Ditto, box, Griffin's, with two partitions. Each, \$2.50

3100.—Ditto, Plattner's, for use before the blow-pipe. " .50

3101.—Silver, pure, for mineral tests. Per ounce, 3.00

3102.—Skins, Cat, for electrical excitation purposes. Each, 1.25

3103.—Ditto, Chamois, for handling brass apparatus. " .75

3104.—Slips, of glass, with edges carefully ground, to prevent cutting the hand, for the testing of small quantities of liquid in quantitative analysis; also convenient for color test, 1x3 in.

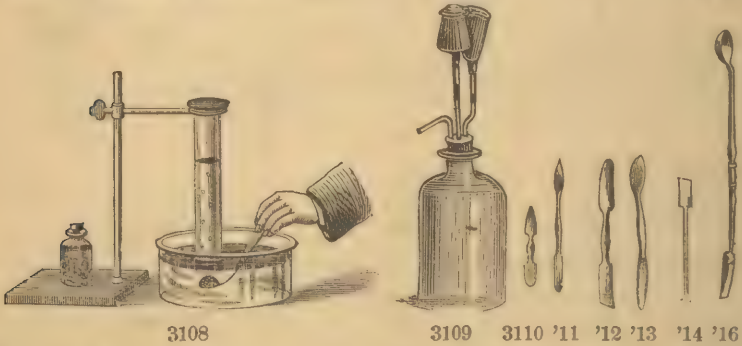
Per doz., .75

3105.—Ditto, of unglazed porcelain, to try streak or color of minerals. Per doz., .75 to \$1.00

Smelling Bottles. See Pungents.

3106.—Soda Paper, for preparing cartridges in blow-piping. .50

3107.—Soda Water, apparatus for making. \$7.50



3108.—Sodium Spoon, for holding sodium in water under cylinder. .50

3109.—Ditto, Flame, apparatus for inverting. \$3.50

Soufflets, cylindric, or glass-blowing table. See Glass blowers' table.

3110.—Spatulas, bone, with pointed handle.

| | | | |
|---------|-----|--------|-----------|
| 4½ in., | .20 | 5 in., | .25 each. |
|---------|-----|--------|-----------|

3111.—Ditto, with spoon.

| | | |
|-----|-----|-----------|
| 4 | 5½ | 6 in. |
| .20 | .25 | .30 each. |

3112.—Ditto, bone, with double end. Each, .25

3113.—Ditto, and spoon, ivory, assorted, small. " .15

3114.—Spatulas, of glass, 6 inches. Each, .15

3115.—Ditto, of brass, double end, 4 inches. " .75

3116.—Ditto, and spoon, of brass, adapted for weighing small quantities. \$1.25

3117.—Ditto, of horn.

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----------|
| 2½ | 4 | 5 | 6 | 7 | 7½ | 8 in. |
| .10 | .15 | .20 | .25 | .30 | .35 | .40 each. |

3118.—Ditto, ditto, with spoon.

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----------|
| 3 | 3½ | 4 | 4½ | 5 | 5½ | 6 | 7 | 8 in. |
| .15 | .18 | .20 | .23 | .25 | .28 | .35 | .40 | .50 each. |

3119.—Ditto, platinum. Per grain, .3



3120.—Ditto, porcelain, with handle.

| | | | | |
|-----|-----|-----|-----|-----------|
| 4½ | 5½ | 6½ | 7½ | 8½ in. |
| .40 | .45 | .50 | .65 | .70 each. |

3121.—Ditto, ditto, square end.

| | | |
|-----|-----|--------------|
| 11½ | 14½ | 17½ in. |
| .75 | .90 | \$1.25 each. |

3122.—Ditto, ditto, double.

| | | |
|-----|-----|-----------|
| 11½ | 14¾ | 17 in. |
| .50 | .60 | .90 each. |

3123.—Ditto, ditto, with spoon.

| | | |
|-----|-----|--------------|
| 11 | 14½ | 17 in. |
| .55 | .70 | \$1.00 each. |

3124.—Ditto, steel, double ends. Each, .25 to .75

3125.—Ditto, ditto, cocoa handle, length of blade—

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|--------------|
| 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 in. |
| .25 | .30 | .35 | .40 | .50 | .60 | .80 | \$1.00 each. |

3126.—Specific Gravity Bottles, plain, solid stopper, cut glass.

| | | |
|--------|------|------------|
| 100 | 500 | 1000 grs. |
| \$1.00 | 1.75 | 2.50 each. |

3127.—Ditto ditto, ditto, ditto.

| | | | |
|--------|------|------|------------|
| 10 | 25 | 50 | 100 grams. |
| \$1.25 | 1.50 | 1.75 | 2.00 each. |

3128.—Specific Gravity Bottles, perforated stopper, light blown glass.

| | | | |
|-----|--------|------|------------|
| 100 | 250 | 500 | 1000 grs. |
| .75 | \$1.00 | 1.50 | 2.00 each. |

3129.—Ditto, ditto, ditto, ditto, in fine chamois-lined leather cases, with counterpoise.

| | | | |
|--------|------|------|------------|
| 100 | 250 | 500 | 1000 grs. |
| \$2.50 | 3.00 | 4.00 | 5.00 each. |

3130.—Ditto, ditto, ditto, ditto.

| | | |
|--------|------|------------|
| 10 | 25 | 50 gram's. |
| \$2.50 | 3.50 | 4.00 each. |

3131.—Ditto, ditto, ditto, ditto, in case, with fine chamois-lined leather case, of cut glass, with solid stopper.

| | | | |
|-----------|--------|------------|------------|
| 25 grams. | \$4.00 | 100 grams. | 7.50 each. |
|-----------|--------|------------|------------|

3132.—Ditto, ditto, ditto, ditto.

| | | |
|--------|------|------------|
| 100 | 500 | 1000 grs. |
| \$3.50 | 4.00 | 4.50 each. |

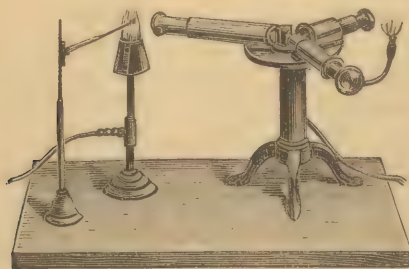
3133.—Ditto, ditto, ditto, with thermometer. 50 grm's, 3.50

3134.—Ditto, ditto, **Flasks**, round, stoppered, 1000 grs. Ea. \$2.00

3135.—Ditto, ditto, ditto, not stoppered, 1000 " " .75

3136.—Spectroscopes, Browning's, for direct vision, with five prisms. Each, \$15.00

3137.—Ditto, ditto, with cover, larger. " 18.00



3143

3138



3147

3152

3138.—Ditto, ditto, "Heidelberg laboratory." single prism, with 2 lamps, millimeter scale, 2 stands, 3 scales on drawing paper, 1 small chart and an assortment of platinum holders for the salts, complete. Each, \$65.00

3139.—Ditto, Browning's elegant "model," two prisms, in a highly polished mahogany case, with lock and key, and handle to carry it, having a swivel arrangement for the telescope, so that the

spectrum may be extended and clearly defined, with tangent screw motion. It will widely separate the D lines. Ea. \$160.00

3140.—Spectroscopes, larger; imported only on special order.

Spectroscopic Charts. See Charts.

3141.—Ditto, **Lamps**, for evaporating metallic substances. Ea. \$3.50

3142.—Ditto, **Stand**, for holding salts in lamp flame. “ 1.50

3143.—Ditto, **Lamp and Stand** together. “ 4.75

3143A.—Ditto, ditto, for alcohol. “ 2.50

Ditto, **Support.** See Supports.

3144.—**Spectrum**, Browning’s lantern arranged for showing on screen, small size. \$50.00

3145.—Ditto, large size, complete. 150.00

Spirit Lamps. See Lamps.

3146.—**Spiral**, or Spotted Tube. \$3.00 to 5.00

3147.—**Spoons**, Blow-pipe, of iron. Each, .25 to .50

3148.—**Spoons**, bone.

| | | |
|----------------|-----|-----------|
| $2\frac{1}{2}$ | 5 | 6 in. |
| .10 | .20 | .25 each. |

3149.—Ditto, brass, turned, for weighing powders. Each, \$1.25

3150.—Ditto, tea, of glass. Per doz., 1.50

3151.—Ditto, dessert, of glass. Each, .40

3152.—Ditto, table, “ “ .50

3153.—Ditto, dipping, ladle form, of glass. “ 1.00

3154.—Ditto, horn, first quality.

| | | | | |
|-----|-----|-----|-----|-----------|
| 3 | 6 | 7 | 8 | 9 in. |
| .18 | .25 | .30 | .35 | .50 each. |

3155.—Ditto, horn, ordinary.

| | | | | |
|-----|----------------|-----|----------------|-----------|
| 5 | $5\frac{1}{2}$ | 7 | $7\frac{1}{2}$ | 8 in. |
| .15 | .18 | .20 | .25 | .30 each. |

And wide bowl, $7\frac{1}{2}$ in., .40.

3156.—Ditto, iron. Each, .40

3157.—Ditto, porcelain.

| | | | | |
|----------------|-----|-----|----------------|---------------------|
| $5\frac{3}{4}$ | 7 | 9 | $9\frac{1}{4}$ | $13\frac{1}{2}$ in. |
| .30 | .50 | .60 | .75 | \$1.50 each. |

3158.—Ditto, tea, porcelain. Per doz., \$3.00

3159.—Ditto, ditto, ditto, perforated, for dipping crystals or leeches, oval. Each, .50

3160.—Ditto, ditto, ditto, ditto, round. “ .60 3160

3161.—**Sticks**, of prepared coal, for breaking glass. Per doz., .60

3162.—Ditto, ditto, ditto, ditto, larger. “ .70





3163.—Stills, of copper, with worm, tinned.

| | | |
|---------|-------|-------------|
| 1 | 2 | 3 galls. |
| \$12.00 | 15.00 | 20.00 each. |

3164.—Stirrers, of glass, ends polished.

| | | |
|-----|-----|--------------|
| 6 | 9 | 12 in. |
| .30 | .45 | .60 per doz. |

3165.—Stool, insulating. \$5.00

3166.—Stop Cocks, of brass, mounted on foot, with double ends,
for tubing, with screw knobs, for securing to table. Each, \$1.50

3167.—Ditto, ordinary. " 1.25

3168.—Ditto, with double ends, for tubing. " 1.25

3169.—Ditto, one end for tubing, 1 male screw. " 1.25

3170.—Ditto, double male screw. " 1.25

3171.—Ditto, ditto, female " " 1.25

3172.—Ditto, male and female screw. " 1.25

3173.—Ditto, brass, one end for tubing and one for inhaling. Ea. 1.00

3174.—Ditto, earthenware, English.

| | |
|---------------------|-------------------------|
| 4½ in. long, \$3.00 | 9½ in. long, 4.50 each. |
|---------------------|-------------------------|

3175.—Ditto, ditto, French.

| | | | | |
|--------|------|------|------|------------|
| 7½ | 9 | 10 | 12 | 15 in. |
| \$2.50 | 3.00 | 4.00 | 5.00 | 6.00 each. |

3176.—Ditto, glass, for vinegar and acids, small. Each, 1.25

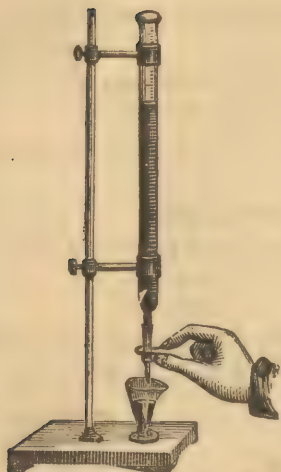
3177.—Ditto, ditto, Geissler's, of glass, for connections. " 1.50

3178.—Ditto, ditto, heavy. " 1.50

3179.—Ditto, for gas generators. " 1.25

3180.—Ditto, Deleuil, of silver, for assay, by the wet way. " 30.00

- 3181.—**Stop Cocks**, brass, for Marsh's arsenic test. Each, \$1.50
- 3182.—Ditto, one end bent and the other end ground, for fitting tubulatures, of glass. Each, \$1.25
- 3183.—Ditto, of glass, one end enlarged to receive a cork. " 1.25
- Stoppers**, caoutchouc: See Rubber.
- 3184.—**Storm Glasses**, plain. " 1.00
- 3185.—Ditto, with thermometer. " 2.50
- 3186.—**Stoves**, gas, small vulcan. " .75
- 3186A.—Ditto, ditto, larger.
- | | | |
|--------|------|------------|
| Nos. 1 | 2 | 3 |
| \$1.25 | 1.50 | 1.75 each. |
- 3187.—Ditto, Kerosene. No. 3, \$5.00 No. 4, 6.00 each.
- 3188.—Ditto, ditto, with boiler, for heating purposes. Each, \$4.50
- 3189.—**Straining Baskets**, porcelain, with handle on the side. Each, \$3.25
- 3190.—Ditto, with handle on the top, shallow. " 3.00
- 3191.—Ditto, ditto, deep. " 3.50
- 3192.—Ditto, earthenware, with handle on the side. Each, \$2.00 to 3.00
- 3193.—Ditto, with handle on top. " 2.50 to 3.50
- 3194.—**Straining Dishes**, porcelain, perforated for crystals, flat bottom.
- | | | | |
|-----|--------|------|------------|
| 7 | 9 | 10½ | 12 ins. |
| .75 | \$1.00 | 1.25 | 1.50 each. |
- 3195.—Ditto, porcelain, round bottom, large size, glazed inside and out.
- | | |
|----------------|-----------------------|
| 13 in., \$3.50 | 15½ in., \$4.50 each. |
|----------------|-----------------------|
- 3196.—Ditto, porcelain, with handle on each side, holes small, 6 in. diameter. Each, \$1.00
- 3197.—Ditto, porcelain, small hemispherical, with handle on one side.
- | | |
|---------------|------------------|
| No. 1, \$1.25 | No. 2, .75 each. |
|---------------|------------------|
- 3198.—Ditto, **Plates**, French, with rim around the top.
- | | | |
|-----|-----|--------|
| 20 | 25 | 30 cc. |
| .35 | .40 | .50 |
- 3199.—**Straw Rings**, French plaited, for supporting round bottom vessels, dishes, flasks, retorts,
- | | | | | | |
|-----|-----|-----|-----|-----|-----------|
| 3 | 3½ | 4¼ | 5½ | 7 | 9 in. |
| .18 | .20 | .22 | .27 | .35 | .40 each. |
- Suction Tubes**, for filling bulbs, etc., see Filling Tubes.
- 3200.—**Supports**, for potash bulbs, with hooks. Each, \$1.50



3202

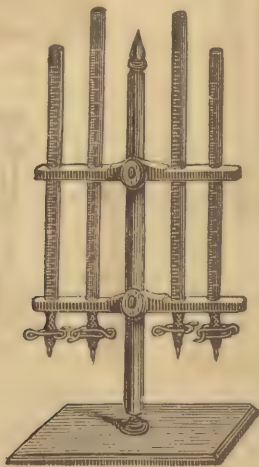


3204

- 3201.**—Supports, for objects in lamp flame. Each, \$1.50
3202.—Ditto, for burettes, of brass, of light iron base, and clamps, with cork lining for two burettes. Each, 3.50
3203.—Ditto, of brass, new style, with porcelain foot for two burettes, for micro-chemical purposes, the holders shaped to the burette, and nicely cork lined. Each, \$5.00



3206



3207



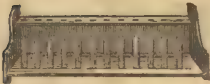
3208

- 3204.**—Ditto, of brass, for two burettes, spring clamp, with cork lining, and fine oiled black walnut foot. \$4.00

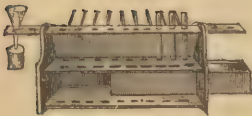
- 3212.**—Support, Mischerlich's, for the examination of fluids under the spectroscope. \$7.50
- 3213.**—Ditto, earthen, for crucibles, or "*fromages*." .20
- 3214.**—Ditto, porcelain, for small dishes. .25
- 3215.**—Ditto, Table, including fork and drying tripod.
- | | | | |
|-----|--------|------|---------------|
| 6 | 9 | 12 | 13½ in. high. |
| .75 | \$1.00 | 1.25 | 1.50 each. |
- 3216.**—Supports, or Filter Stands, for single funnel. Each, \$1.00
- 3217.**—Ditto, or ditto, for two funnels, single arm. " 1.25
- 3218.**—Ditto, ditto, for six funnels and double arm. " 1.25
- 3219.**—Ditto, or Filtering Stands, to cover beaker, according to Fresenius. Each, \$1.25
- 3220.**—Ditto, with large wooden ring. " 1.50
- 3221.**—Ditto, with two wooden rings. " 1.50



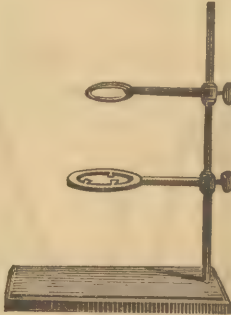
3226



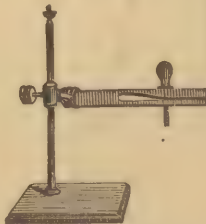
3227



3229



3233



3236



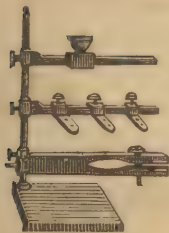
3234



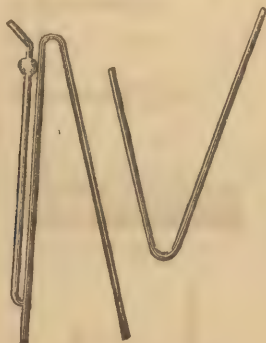
3237

- 3222.**—Ditto, of iron, with triangular base arranged for holding spirit lamp. Each, \$1.50
- 3223.**—Ditto, Hoffman's, with wood-lined rings. " 2.75
- 3224.**—Ditto, wood, for sustaining tubes and connecting apparatus, black varnished wood, Griffin's form, 314. Each, \$1.75
- 3225.**—Ditto, ditto, ditto, ditto, mahogany. " 2.00
- 3226.**—Ditto, Test tubes, for 13 tubes. " .75

- 3227.**—Supports, Test tubes, polished mahogany, with pins, for draining. Each, \$1.50
- 3228.**—Ditto, ditto, for 18 tubes. “ 1.00
- 3229.**—Ditto, ditto, mahogany, with drawer and draining pins. Each, \$2.00
- 3230.**—Ditto, ditto, universal, circular. “ 2.00
- 3231.**—Ditto, ditto, japanned tin, for six test tubes, Each, .60
- 3232.**—Ditto, for retorts, wire, two rings. “ .90
- 3233.**—Ditto, ditto, iron, “ “ \$1.00
- 3234.**—Ditto, ditto, “ three rings. “ 1.25
- 3235.**—Ditto, ditto, brass, “ with porcelain foot. “ 4.50
- 3236.**—Ditto, ditto, of wood, Gay Lussac form. “ 1.25
- 3237.**—Ditto, ditto, “ Shellbach, round iron base, two joints and sliding clamp. Each, \$2.00
- 3238.**—Ditto, ditto, iron base, two joints and sliding clamps, polished. Each, \$2.50
- 3239.**—Ditto, ditto, French, upright. “ 1.50



3240



3247



3250

- 3240.**—Ditto, ditto, universal. “ 2.00
- 3241.**—Ditto, ditto, “ fine quality, heavy. “ 3.50
- 3242.**—Ditto, ditto, “ highly polished, pear wood. “ 4.00
- 3243.**—Ditto, feet of porcelain, round. “ .50
- 3244.**—Ditto, japanned, for flasks in Bunsen's quick filtering apparatus. Each, \$3.50

Supports, other forms made to order.

- 3245.**—Stand, of iron, with polished fork, Hoffman's. “ 1.50
- 3246.**—Ditto, “ wood, with fork, small. “ .75

Swimmers. See Burette Swimmers.

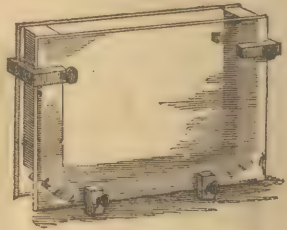
- 3247.**—Syphon, glass, plain. 12 in., .25 15 in., .30 each.
Ditto, Acid. See Acid Syphons.
- 3248.**—Ditto, pipette, glass, new style, various. Each, .75
- 3249.**—Syringes, glass. Each, .50 to \$1.50



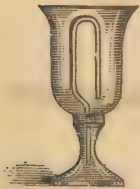
3248



3248



3253



3254



3262

- 3250.**—Ditto, metallic, male, in mahogany cases. Each, \$4.00
- 3251.**—Ditto, male and female, “ “ 5.00
- 3252.**—Ditto, Fire, of glass. “ 6.00
- Ditto, brass. See Air Pumps.
- 3253.**—**Tank**, for holding solutions when under examination by the Lantern; consists of two glass plates, separated by rubber partition which forms the wall of the tank, on three sides. \$3.50
- 3254.**—**Tantalus Cup.** 2.00
- 3255.**—**Tapers**, wax, in small boxes. Per box, .25
- 3256.**—Ditto, ditto, to burn in oxygen, etc. Per pair, .20
- 3257.**—**Telescope**, with mounting support, on legs, made by the celebrated Merz, of Munich, in leather case, achromatic, power 50 times. \$30.00
- 3258.**—**Telegraph**, working model, with reel. 8.00
- Telegraphic Apparatus**, other, special to order.
- 3259.**—**Tellurian**, for showing the phenomena of the seasons. \$13.00

Test Chests. See Reagent chests.

Tests, blow-pipe cases. See Blow-pipe Cases, etc., at the end of the book.

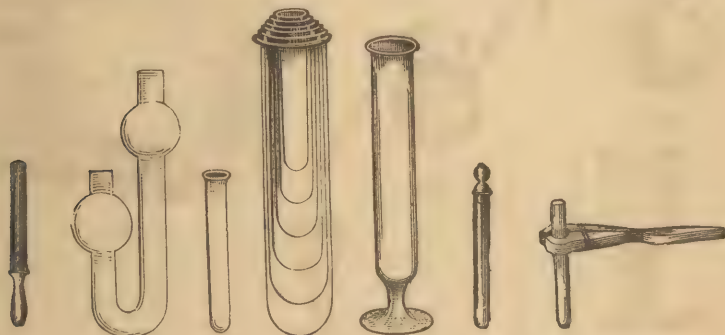
3260.—Test Dishes, porcelain, for colored precipitates. Each, .25

3261.—Ditto, Glasses, conical, on foot, without lip. “ .40

3262.—Ditto, ditto, French, ditto, ditto, with lip.

| | | | | | |
|---------------|-----|-----|-----|-----|-----------|
| $\frac{1}{2}$ | 1 | 2 | 4 | 8 | 16 oz. |
| .15 | .18 | .25 | .30 | .40 | .50 each. |

3263.—Ditto, ditto, micro-chemical, of thin glass, very small, made by blow-pipe. Per doz., \$1.75



3264 3266 3269 3271 3272 3273 3274

3264.—Test Lead Measure, Plattner’s. Each, .50

3265.—Ditto, ditto, Sieve, brass, Plattner’s. “ .50

Test Metals. See Minerals, at the back part of this book.

3266.—Test, Marsh’s, arsenic. 75

3267.—Test Papers, assorted. Per sheet, .5

3268.—Test Tubes, infusible Bohemian glass, 6 x $\frac{3}{4}$ in. Per doz., \$1.25

3269.—Ditto, French and German, with the ends even thickness throughout; free from lead.

| | | | | | | |
|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-----|-----------------|---------------------------------|
| 3 | 4 | 5 | 6 | 7 | 9 | 10 in. long. |
| $\frac{1}{8}$ to $\frac{3}{8}$ | $\frac{3}{8}$ to $\frac{1}{2}$ | $\frac{1}{2}$ to $\frac{5}{8}$ | $\frac{5}{8}$ to $\frac{3}{4}$ | 1 | 1 $\frac{1}{2}$ | 1 $\frac{3}{4}$ in. wide about. |
| .30 | .40 | .50 | .60 | .75 | \$1.50 | 2.25 per doz. |

Each one of the above Test Tubes is carefully wrapped in paper, to keep them from chemical contact, and to preserve the lips from breakage. The diameters are averaged.

3270.—Ditto, in nests of

| | | | |
|-----|-----|-----|-----------|
| 3 | 6 | 9 | 16 |
| .20 | .30 | .50 | .70 each. |

3271.—Ditto, with pasteboard cases, in nests of

| | |
|-----|-----------|
| 6 | 9 |
| .40 | .60 each. |

3272.—Ditto, on foot.

| | | | | |
|-----------------|-----|-----|--------|---------------|
| 1 $\frac{1}{2}$ | 2 | 4 | 6 | 8 in. |
| .40 | .45 | .60 | \$1.00 | 1.25 per doz. |

- 3273.**—Test Tubes, stoppered, 5 in. Per doz., \$1.25
Test Tube Brushes. See Brushes.
3274.—Ditto, **HOLDERS**, wood, new form. Each, .20
3275.—Ditto, ditto, brass, with sliding band. “ .50
3276.—Ditto, ditto, “ “ wood handle. “ .60
3277.—Ditto, ditto, wire, with wood handle. “ .50
 Ditto, ditto, and supports. See Supports.
3278.—Testing Slab, plain, of porcelain. “ .50



3279



3281

- 3279.**—Theatre Pantin, with glass pillars, for dancing figures. \$15.00
3280.—Thermo Electric, pair of bismuth and antimony. \$2.00
3281.—Ditto, ditto, Pile. Each, \$30.00 to \$35.0
3282.—Thermometers, Axillary. 6 in., \$2.00 7 in., \$3.00 each.
3283.—Ditto, Beer, accurately registered, Fahrenheit and Centigrade. Each, \$2.00
3284.—Ditto, chemical, 8 in. long, up to 212 deg. Fah., paper scale in glass tube, and pasteboard cases. Each, .85
3285.—Ditto, ditto, ditto, ditto, 10 in. long. “ .90
3286.—Ditto, ditto, ditto, ditto, 12 “ “ \$1.00
3287.—Ditto, ditto, ditto, ditto, 15 “ “ 1.20
3288.—Ditto, ditto, ditto, ditto, up to 260 deg.
 12 in. long, \$1.25 15 in. long, 1.25 each.
 The largest thermometers are smallest in diameter.
3289.—Ditto, ditto, Celsius paper scale, 50 to 100 deg. Each, 1.50
3290.—Ditto, ditto, Celsius, or Centigrade, up to 350 or 410 deg. Each, \$2.00

- 3291.**—**Thermometers**, Chemical, Milk scale, Fah., enclosed in glass tube, graduated up to 212 deg. Each, \$1.50
- 3292.**—Ditto, ditto, ditto, ditto, running from 280 to 330 deg. Each, \$1.75
- 3293.**—Ditto, ditto, ditto, ditto, running from 400 to 640 deg. Each, \$2.00
- 3294.**—Ditto, ditto, ditto, ditto, running up to 660 and 800 deg. Each, \$2.25
- 3295.**—Ditto, ditto, ditto, Fah. and Reamur, up to 700 deg. “ 3.00
- 3296.**—Ditto, ditto, ditto, engraved on the tube, Centigrade or Celsius, up to 100 deg. Each, \$2.25
- 3297.**—Ditto, ditto, ditto, up to 200 deg. “ 2.50
- 3298.**—Ditto, ditto, ditto, up to 360 “ “ 3.00
- 3299.**—Ditto, ditto, ditto, Fah., up to 200 deg. “ 2.25
- 3300.**—Ditto, ditto, ditto, ditto, “ 400 “ “ 2.50
- 3301.**—Ditto, ditto, ditto, ditto, “ 600 “ “ 3.00
- 3302.**—Ditto, ditto, ditto, ditto, above. “ 3.50
- 3303.**—Ditto, ditto, ditto, ditto, double scale, large, with brass top Fahrenheit, 300. Each, \$3.00
- 3304.**—Ditto, Differential, Leslie's. \$2.50 to 4.00
- 3305.**—Ditto, ditto, ditto, having two limbs, joined with tightly fitting ground glass stop-cock. Each, \$4.00
- 3306.**—Ditto, Day and Night, glass. “ 4.00
- 3307.**—Ditto, House, in mahogany, Fahrenheit and Centigrade, French spirit. Each, .40
- 3308.**—Ditto, ditto, ditto, japanned tin, Fahrenheit.
- | | | |
|-----|-----|--------------|
| 6 | 9 | 12 in. |
| .50 | .75 | \$1.00 each. |
- 3309.**—Ditto, Medical, for ascertaining heat of the human body, during fever or otherwise. Each, \$5.00
- 3310.**—Ditto, Metallic, watch form, silver case. “ 20.00
- 3311.**—Ditto, ditto, revolving, for pocket, Fahrenheit and Centigrade, German silver case. Each, \$10.00
- 3312.**—Ditto, Sugar-house, French, accurately graduated, Fahrenheit and Centigrade. Each, \$10.00
- 3313.**—Ditto, **Window**, Milk glass, silvered, etc., Fahrenheit, Celsius, and Reamur. Each, \$1.00 to \$5.00
- 3314.**—**Thermometer Tubes.** Each, .25
- 3315.**—**Thieves**, for drawing or decanting spirits, glass. “ .75

- 3316.**—Thunder House, mahogany. Each, \$8.00
3317.—Tin Foil, for blow-pipe experiments. Per square foot, .15
3318.—Tissue Figure. \$1.50



3319



3320



3322



3323

3319.—Tongs, coal.

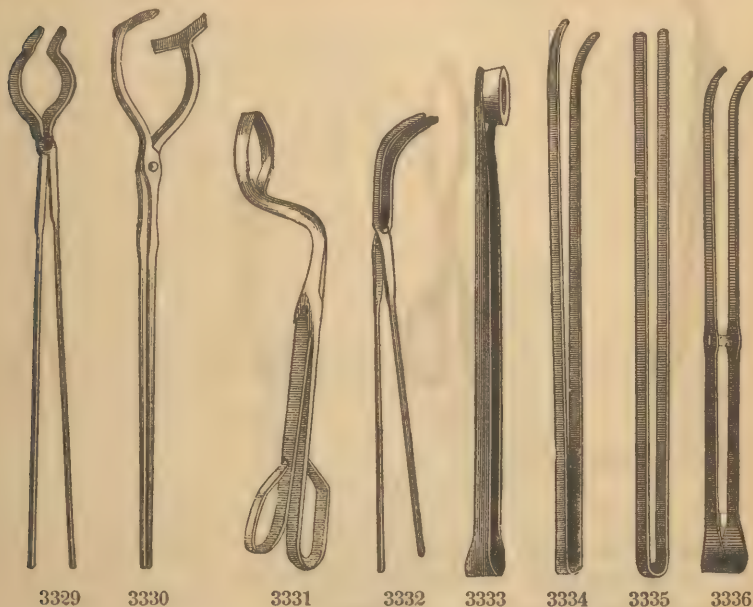
13
\$1.25

14
1.50

17½ in.
1.75 each.

- 3320.**—Ditto, ditto, ditto, heavy, with twine wound handles to protect the hands from frost in cold weather. Each, \$1.00
3321.—Ditto, crucible, 6 in. japanned iron. “ .50
3322.—Ditto, ditto, single bend steel, 9 in. “ 1.00
3323.—Ditto, ditto, double bend. “ 1.25
3324.—Ditto, ditto, ditto, German silver. “ 1.50
3325.—Ditto, ditto, ditto, nickleized. “ 2.25
3326.—Ditto, ditto, steel, with heavy platinum points, double bend. Each, \$6.00
3327.—Ditto, ditto, German silver, with heavy platinum points, double bend. Each, \$6.50
3328.—Ditto, ditto, steel, with large double bend. “ 1.50
3329.—Ditto, wrought iron, for sand crucibles, with ditto. “ 1.75
3330.—Ditto, for lifting crucibles vertically, extra heavy. “ 2.00
3331.—Ditto, ditto, French, double bend, 14 to 18 inches long. Each, \$1.50
3332.—Ditto, ditto, wrought iron, single bend, heavy, for handling sand crucibles. Each, \$1.00 to \$1.25
3333.—Ditto, cupel, bent in the ends, of steel, to surround the cupel. Each, \$1.50

- 3334.—Tongs, cupel, of galvanized iron, single bend. Each, \$1.50
 3335.—Ditto, ditto, straight. " 1.50
 3336.—Ditto, ditto, French, bent on the end, with strap " 2.75



- 3337.—Ditto, Scorifier, one limb to fit around the scorifier, and one to fit over it, so that it can be moved in and out of the cupelle furnace very steadily. Each, \$1.25

Tools for Blow-piping, in chests. See Blow-pipe Apparatus at the close of the book.

- 3338.—Torricellian Experiment. \$4.50

- 3339.—Touries, or Carboys, with 2 necks and tubulature near the foot, of French earthenware, for the distillation of acids, etc.
 60 litres, \$12.00 100 litres, 15.00 each.

- 3340.—Ditto, connecting pipe, for above. Each, \$1.50

- 3341.—Ditto, of German stoneware, glazed outside, 200 litres.
 Each, \$50.00

- 3342.—Ditto, stoneware connections, for ditto. " 5.00

- 3343.—Ditto, set of 2, with connecting pipe. " 1.00

- 3344.—Trays, lead. Each, .50

- 3345.—Ditto, shallow porcelain, for holding jars containing corrosive liquids.
 Each, .20 to .40



3337



3350



3339



3352



3353



3356



3343



3360

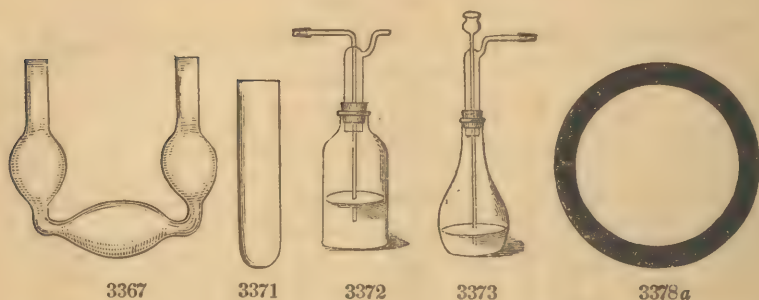
- 3346.—Trays, walnut, with partitions, for batteries. Each, \$1.50
 3347.—Trellis Top, for furnace, of gauze wire. " 1.50
 3348.—Triangles, of glass. " .30
 3349.—Ditto, Plattner's Blow-pipe. .25
 3350.—Ditto, ditto, porcelain. " .50
 3351.—Ditto, ditto, wire. Per doz., .60

Trimming Hammers. See Hammers.

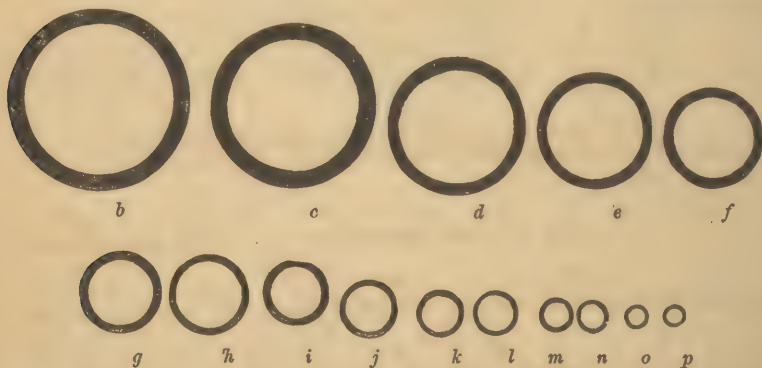
- 3352.—Tripods, of galvanized iron, for gas burner. " \$7.00
 3353.—Ditto, ditto, brass, for spirit lamp. " 9.00
 3354.—Ditto, of wrought iron, with two concentric rings. Ea., 1.00
 3355.—Ditto, ditto, ditto, with 7 concentric rings. " 2.00
 3356.—Ditto, of iron, triangular shape, sets of three. 1.75
 3357.—Ditto, ditto, singly.

Smallest, .50 Medium, .60 Largest, .75 each.

Tubes, Arsenic, Chloride of Calcium, Combustion, Condensing, Communicative, Gas, etc. See respective heads.



- 3372.**—Tubes, Vogel's modification of Woulff's apparatus, a substitution for Woulff's bottles by insertion into the neck of an ordinary bottle. \$1.00
- 3373.**—Ditto, ditto, with funnel tube. 1.25
- 3374.**—Tubing, barometer. Per lb. .75
- 3375.**—Ditto, capillary, 3 ft. length. Each, .06
- 3376.**—Ditto, colored. Per lb. \$2.00



- 3377.**—Ditto, soft Bohemian, French and German. Per lb., .75
- 3378.**—Ditto, ordinary soft glass, according to quantity. Per lb., .50 to .60
- 3379.**—Ditto, single up to $\frac{1}{4}$ in. bore. Each, .10
- 3380.**—Ditto, of hard glass, from pure silicates, entirely free from lead, manufactured expressly for making combustions in ~~organic~~ analysis, of genuine Bohemian glass and no other, $\frac{1}{2}$ to $\frac{3}{4}$ in. Per lb., \$1.00
- 3381.**—Ditto, hard, free from lead, $\frac{1}{8}$ to $\frac{3}{8}$ in. " 1.25
- 3382.**—Ditto, glass, white, of large bore. " 1.50

LIST OF
Numbers, Diameters and Yards Per Pound
OF DIFFERENT SIZES OF
COPPER WIRE,
ACCORDING TO THE BIRMINGHAM WIRE GAUGE.

| No. B.W.G. | Diameter in Inches. | Yards per Pound. | No. B.W.G. | Diameter in Inches. | Yards per Pound. | No. B.W.G. | Diameter in Inches. | Yards per Pound. |
|---------------|---------------------------|------------------------|---------------|---------------------------|------------------------|---------------|---------------------------|------------------------|
| 10 | .134 | 6.007 | 19 | .042 | 62.98 | 28 | .014 | 569.5 |
| 11 | .120 | 7.646 | 20 | .035 | 89.86 | 29 | .013 | 651.3 |
| 12 | .109 | 9.705 | 21 | .032 | 108.5 | 30 | .012 | 771.6 |
| 13 | .095 | 13.12 | 22 | .028 | 141.7 | 31 | .010 | 1111 |
| 14 | .083 | 17.36 | 23 | .025 | 176.1 | 32 | .009 | 1371 |
| 15 | .072 | 22.67 | 24 | .022 | 229.6 | 33 | .008 | 1736 |
| 16 | .065 | 26.29 | 25 | .020 | 277.9 | 34 | .007 | 2267 |
| 17 | .058 | 33.03 | 26 | .018 | 342.9 | 35 | .005 | 4444 |
| 18 | .049 | 45.83 | 27 | .016 | 434 | 36 | .004 | 6944 |

Presented

By J. S. Billings, Washington, D. C.

Georgetown College

*With the kind wishes of the author,
trusting that it will be found useful in
the selection of such articles as may be
required for Scientific investigations.*

As the number of Catalogues issued is limited, please preserve this Copy.

No. ~~1234~~

3383.—Tubing, Earthen, 1 inch bore. Each, \$1.50

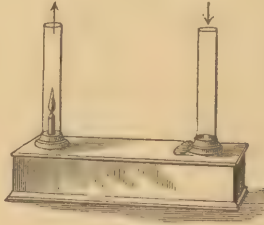
3384.—Ditto, Porcelain.
 $\frac{1}{4}$ in. bore, .75 $1\frac{1}{2}$ in. bore, \$1.50 each. 30 in. length.



3385



3394



3396



3400

3385.—Ditto, ditto, with flanged ends.

$\frac{3}{8}$ 1 2 in.
 \$1.00 1.50 2.25.

3386.—Ditto, Rubber, black or unvulcanized.

$\frac{1}{8}$ $\frac{3}{16}$ $\frac{1}{4}$ in.
 .20 .25 .30 per foot.

3387.—Ditto, ditto, vulcanized, lengths cut to order.

$\frac{1}{8}$ $\frac{3}{16}$ $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ in.
 .10 .12 .15 .20 .22 .30 .35 per foot.

3388.—Ditto, ditto, ditto, full pieces.

$\frac{1}{8}$ $\frac{3}{16}$ $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ in.
 .08 .10 .12 .15 .20 .25 per foot.

3389.—Ditto, ditto, ditto, heavy, $\frac{1}{4}$ in. 25, $\frac{3}{16}$ in. 30 per foot.

3390.—Ditto, rubber, extra heavy, barometer, to stand a heavy pressure, assorted sizes. Per lb. \$2.00

3391.—Ditto, thermometer. " .75

3392.—Turmeric Paper. Per sheet, .05

Twaddle's Hydrometer. See Hydrometer.

3393.—Twine Boxes. Each, \$1.00

3394.—Tourmaline Pincers. Each, \$9, 10, 11, 12

3395.—Twine, small, colored. Per lb. \$1.50

3396.—Upcast and Downcast Draught, model of, in glass. Each, \$5.00

3397.—Urinals, male, of glass. " .25

3398.—Ditto, " of rubber. " .50

3399.—Urinals, female, of glass, Each, .25
 Other articles under this letter. See their respective headings in the Catalogue under other titles.

3400.—Vases, large glass, with flaring top, capacity 2 gallons, for holding sponges, etc. Each, \$2.50

3401.—Vapor Index, Lippincott's.

3402.—Vases, earthen, French, flat bottom, for silver and other solutions held in acid, 10 galls., Each, \$12.00

3403.—V Tubes, for condensing limb, 7 ins. long and $\frac{3}{4}$ in. bore. Each, .50

3404.—Vials, Homeopathic, 1 drachm .15, 2 drachms .20 per doz.

3405.—Ditto, Sample, of fine white French glass, for the preservation of samples; 4 oz. capacity. Per doz. \$4.50

Vogel's Gas Bottle. See Woulff's Tubes.

3406.—Washing Bottles, Faraday's.

| | | |
|-------|------|-----------|
| 8 oz. | pts. | qts. |
| .60 | .75 | .90 each. |

3407.—Watch Glasses, French, used in pairs, or singly as covers to beakers.

| | | | | | | |
|-----|-----------------|-----------------|-----|-----------------|-----------------|---------------|
| 1 | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 2 | 2 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 3 in. |
| .45 | .50 | .55 | .75 | \$1.25 | 1.50 | 2.00 per doz. |

3408.—Ditto, Bohemian, ditto, ditto, ditto, ditto.

| | | | | | |
|-----------------|------|-----------------|------|-----------------|---------------|
| 2 $\frac{1}{2}$ | 3 | 3 $\frac{1}{2}$ | 4 | 4 $\frac{1}{2}$ | 5 in. |
| \$1.65 | 2.25 | 2.75 | 3.25 | 3.75 | 4.50 per doz. |

Ditto, ditto, holders. See Holders.

3409.—Watch Springs, for burning in oxygen. Per doz. .30

3410.—Water Baths, copper, with 3 concentric rings and spun bottom.

| | | |
|--------|-----------------|------------|
| 5 | 5 $\frac{1}{2}$ | 6 in. |
| \$2.00 | 2.50 | 3.00 each. |

3411.—Ditto, ditto, ditto, nickleized.

| | | |
|--------|-----------------|------------|
| 5 | 5 $\frac{1}{2}$ | 6 in. |
| \$2.50 | 3.00 | 3.50 each. |

3412.—Ditto, copper, of extra large size, \$4.50 to \$10.00.

3413.—Ditto, porcelain.

| | | |
|--------|------|------------|
| 4 | 6 | 8 oz. |
| \$1.25 | 1.50 | 2.00 each. |

3414.—Ditto, ditto, with handle on side. Each, \$1.00

3415.—Water Hammer. .75

3416.—Ditto, ditto, singing. 1.00



3406

3415

BECKER & SONS' FINE ANALYTICAL WEIGHTS.

Weights, either gramme or grain, in French polished boxes lined with velvet, every piece fitted separately. Brass weights lacquered; the fraction of the gramme are platinum, except below 20 milligramme, which are made of aluminum. Adjusted to the utmost accuracy.

| | |
|--|---------|
| 3417. —No. 1. Platinum gramme and down to $\frac{1}{10}$ mgr. | \$10.60 |
| 3418. —No. 2. Five gramme piece and down to $\frac{1}{4}$ mgr. | 12.00 |
| 3419. —No. 3. Two twenty gramme pieces and down to 1 mgr., 3 riders. | \$14.00 |
| 3420. —No. 4. Fifty gramme piece and down to 1 mgr., 3 riders. | \$16.00 |
| 3421. —No. 5. Hundred gramme piece and down to 1 mgr., 3 riders. | \$18.00 |
| 3422. —No. 6. Two hundred gramme piece and down to 1 mgr., 3 riders. | \$24.00 |
| 3423. —No. 7. Five hundred gramme piece and down to 1 mgr., 3 riders. | \$28.00 |
| 3424. —No. 8. Five kilo. piece and down to 1 mgr., | 70.00 |

Gramme and Grain Weights, No. 2.

| | |
|--|---------|
| 3425. —Hundred gramme piece and down to 1 mgr. | 9.00 |
| 3426. —Ditto, ditto, " 10 " | 4.50 |
| 3427. —Fifty gramme pieces and down to 1 mgr. | 9.00 |
| 3428. —One kilo. and down to 1 gramme, in mahogany case. | 7.00 |
| 3429. —Five hundred gramme piece and down to 1 gramme, in mahogany case. | \$5.75 |
| 3430. —One thousand grain piece and down to $\frac{1}{100}$ grains, 3 riders | \$18.00 |
| 3431. —One thousand grain piece and down to $\frac{1}{100}$ grain. | 9.00 |
| 3432. —Ten ounces troy, with decimal subdivisions, down to $\frac{1}{10000}$ ounce. | \$14.00 |
| 3433. —Sets of assay ton weights of 4 A. T. down to $\frac{1}{10}$ A. T. | 6.00 |

(The assay ton weights have been introduced by Dr. C. F. Chandler, of the School of Mines, Columbia College, New York, where they are in use for convenience in the assay of ores. The weight denominated by Dr. Chandler "One A. T.," equals 29,1666 grammes, and contains, consequently, as many milligrammes as there are troy ounces in a ton avoirdupois of 2,000 lbs. Therefore, if One A. T. of ore assays 1 milligramme, the ton contains, of course, 1 ounce troy.)

Apothecary Weights, in mahogany boxes, lined with velvet.

- 3434.—No. 1. One troy ounce down to $\frac{1}{4}$ grain. \$2.75
 3435.—No. 2. 1000 grains and down to $\frac{1}{16}$ grain. 7.00

Troy Ounce Weights, of Brass Lacquered, in mahogany boxes, lined with velvet.

- 3436.—No. 1. One ounce and down to $\frac{1}{4}$ grain. \$2.75
 3437.—No. 2. Two two-ounce pieces and down to $\frac{1}{2}$ grain. 5.75
 3438.—No. 3. Five-ounce piece and down to $\frac{1}{2}$ grain. 7.00
 3439.—No. 4. Ten-ounce piece and down to $\frac{1}{2}$ grain. 9.00
 3440.—No. 5. Two twenty-ounce pieces and down to $\frac{1}{2}$ grn. 14.00
 3441.—No. 6. One fifty-ounce piece and down to $\frac{1}{2}$ grain. 18.50
 3442.—No. 7. Two 100-ounce pieces and down to 1 grain. 28.00
 3443.—No. 8. Two-hundred ounce piece and down to 1 grn. 38.00
 3444.—No. 9. Two 500-ounce pieces. 48.00

All the weights in the above list are adjusted according to the French standard and the ounce troy—31,10333 grammes.

- 3445.—**Weights**, sets of fractions of millegrammes, accurately balanced. Each, \$2.50

3446.—Ditto, French, brass, $\frac{1}{2}$ to $\frac{1}{16}$ oz. \$1.50

3447.—Ditto, ditto, mahogany boxes, 50 grammes down. \$3.00

3448.—Ditto, ditto, 100 grammes down. 4.00

3449.—Ditto, ditto, 300 " " 6.00

3450.—Ditto, ditto, 1000 " " \$10.00

3451.—Ditto, ditto, in polished wood boxes, 1 lb. to $\frac{1}{2}$ grain down.

3452.—Ditto, subdivision of grammes. .50

3453.—Ditto, from 1 lb. avoirdupois, down to $\frac{1}{4}$ oz. \$4.50

3454.—**Wire**, brass, for making scratch brushes, etc.; No. 20 up to No. 40. Per lb. \$3.00 to 5.00

3455.—Ditto, copper, $\frac{1}{16}$ in. Per lb. \$2.00

3456.—Ditto, silk wound. " 3.00

3457.—Ditto, copper, silk wound, for making Ruhmkorff's coil and other electrical apparatus. Per gramme, .12

3458.—Ditto, piano, for blow-pipe experiments. Per lb. \$1.50

3459.—Ditto, magnesium. Per foot, .06

3460.—Ditto, gauze of copper, according to fineness. Per sq. ft., .50 to \$1.00

3461.—Ditto, brass. " .40 to .90

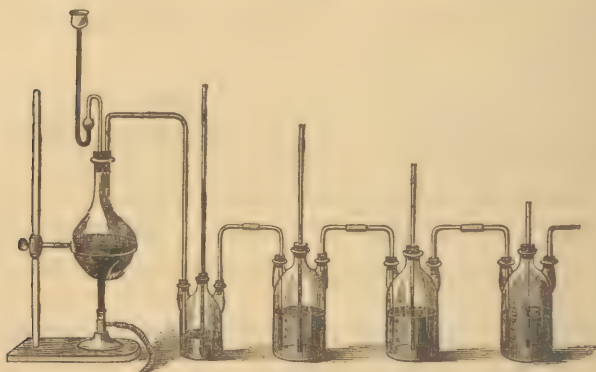


3448.

3462.—Wire, iron, price according to fineness.

3463.—Woulff's Apparatus, for washing Gases.

| 8 oz. | 16 oz. | qts. |
|--------|--------|------|
| \$5.50 | 6.60 | 8.00 |



3463

3464.—Ditto, with lamp.

| 8 oz. | 16 oz. | qts. |
|---------|--------|-------|
| \$10.00 | 12.00 | 14.00 |

Wurtz' Apparatus, for Fractional Distillation. See Distillation.

3465.—Woulff's Apparatus, with gas bottles instead of flasks, and dispensing with lamp and stand. \$4.00 to 6.50

3466.—Zinc, Filings. Per lb. .25

3467.—Ditto, Sheet. " .20

3468.—Zincs, for bichromate batteries, cast. .25 to \$3.00

3469.—Ditto, for Bunsen's batteries, heavy rolled. \$1.50 to 3.00

3470.—Ditto, for Daniell's. .75 to 1.50

3471.—Ditto, for Grove's or Smee's, cast. Per lb., .18

CHEMICALS AND REAGENTS.

THIS List comprises the majority of Chemicals I keep, though there are a number of strictly commercial articles that usually rank under the head of Chemicals, which are omitted, but which I have the fullest facilities for shipping at the lowest market rates.

The prices given are for usual quantities. If large amounts of any article herein priced are desired, I should be pleased to give the benefit of the lowest market quotations, according to the market values at the time.

I have frequently procured Crude Stock Chemicals, Drugs, and other articles for class illustrations in Organic and Applied Chemistry, for my patrons at a distance, and will take pleasure in serving them in this manner in the future, charging only a small per centage for my time and trouble.

Standard Test Solutions, according to Fresenius and other authorities, carefully prepared to order at moderate rates.

Great attention is paid to neatness, cleanliness and accuracy in dispensing reagents.

Complete collections of the elements made and arranged on demand; also suits of the principal spectroscopic salts, neatly put up in glass stoppered vials, for either class illustrations or Laboratory purposes.

E. B. BENJAMIN.

**ABBREVIATED TERMS AND TRADE MARKS,
USED IN THIS WORK.**

Sol.=Solution; Precc.=Precipitated; lb.=pound; oz.=ounce; dr.=drachm; gr.=grain; grm.=gramme; Mg.=Milligramme; C. C.=Centimeter; pt.=pint; qt.=quart; gal.=gallon; Opt.=best, next to pure; pure=next to C. P.; C. P.=Chemically pure; U. S. P.=United States Pharmacopæia; Puriss=extra C. P.; T=Trommsdorff's; M.=Merck's; Spec.=Specimen; Com'l=Commercial; com.=common; Sub.=Sublimed; F. F.=Forte Fortissimo, or very strong; F. F. F. F.=Double; Conc.=Concentrated; Fren. or F. T.=Fresenius' Test; Sp. Grav.=Specific Gravity; Am.=American.

COMPARATIVE TABLE OF WEIGHTS.

| | | |
|----------------------|---|--------------------------|
| 1 pound Avoirdupois, | = | 7000 grains. |
| 1 ounce “ | = | 437½ “ |
| 1 drachm, | = | 60 “ |
| 28.35 grammes, | = | 1 ounce Avoirdupois. |
| 21.01 “ | = | 1 “ Troy. |
| 453.60 “ | = | 1 pound Avoirdupois. |
| 1 “ | = | 15.42 grains. |
| 100 “ | = | 3.53 ounces Avoirdupois. |
| 100 “ | = | 3.02 “ Troy. |
| 1000 “ | = | 1 Kilo |
| 1 Kilo., | = | 2 pounds Avoirdupois. |

PRICE LIST.

A.

| | | |
|--|---------------------------|------|
| Acetone, C. P..... | Per oz., \$ | .30 |
| Acid, Acetic, U. S. P., Sp. Grav., 1047..... | Per lb., | .30 |
| " Ditto, strictly C. P., Sp. Grav., 1047 U. S. P., same quality as Baufoy's best Eng..... | Per lb., | .60 |
| " Ditto, Acetic, Glacial..... | Per lb., \$2.00, Per oz., | .15 |
| " Antimonic, C. P..... | " | .25 |
| " Arsenic..... | Per lb., \$1.75 | .20 |
| " Arsenious, C. P..... | " 1.50 | .15 |
| " Ditto, Lump Coml., very com..... | " .35 | |
| " Boracic, C. P..... | " 1.00 | .10 |
| " Benzoic, True..... | " | .80 |
| " Ditto, Com. Artificial..... | " | .40 |
| " Butyric, Puriss..... | " | .60 |
| " Camphoric, True..... | Per dr., | .50 |
| " Chloric..... | Per oz., | 1.50 |
| " Carbazotic, Puriss..... | " | .50 |
| " Capronic..... | Per dr., | 1.00 |
| " Carbolic, White Cryst..... | Per lb., \$2.00 Per oz., | .25 |
| " Ditto, Com'l Colored..... | " 1.50 | .20 |
| " Chromic, C. P., Cryst..... | " | .50 |
| " Cresylic, C. P., Cryst..... | " | 1.00 |
| " Citric, C. P., Cryst..... | Per lb., \$2.00 Per oz., | .20 |
| " Formic, C. P..... | " | .60 |
| " Fluoric. See Hydrofluoric, in 1 oz. and 8 oz. bot- tles..... | | |
| " Gallic, Puriss..... | " | .50 |
| " Gallotannic..... | " | .75 |
| " Hippuric..... | Per dr., | .60 |
| " Hydriodic..... | " | 1.25 |
| " Hydrobromic..... | " | .75 |

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| Acid, Hydrocyanic, U. S. P. | Per oz., \$ | .20 |
| “ Hydrofluoric, in gutta percha bottles, with bottle | Per lb., | 3.00 |
| “ Hydrofluosilicic, C. P. | “ | 1.00 |
| “ Hydrochloric. See Muriatic. | | |
| “ Hypophosphorous, Sol. | Per oz., | .50 |
| “ Iodic, C. P. | Per dr., | .50 |
| “ Lactic, C. P., Conc. | “ | .20 |
| “ Malic. | “ | .50 |
| “ Margaric, C. P. | “ | .40 |
| “ Meconic. | “ | 2.00 |
| “ Mucic | “ | 2.00 |
| “ Molybdic, C. P., T. | Per oz., | .95 |
| “ Muriatic, C. P., in 1 and 6 lb. bottles. | Per lb., | .30 |
| “ Ditto, Com'l. | “ | .15 |
| “ Ditto, special price for Carboy. | | |
| “ Nitric, C. P., 1 and 7 lb. bottles. | “ | .40 |
| “ Ditto, Com'l. | “ | .20 |
| “ Ditto, Fuming Red. C. P. | “ | 2.50 |
| “ Ditto, ditto, ditto. | “ | 1.50 |
| “ Nitrohydrochloric, Pure. | “ | .50 |
| “ Oxalic, C. P. T., according to quality. | “ | 2.00 |
| “ Ditto, C. P., Am., very superior. | “ | 1.25 |
| “ Ditto, Coml. | “ | .40 |
| “ Oleic, C. P. | Per oz., | 1.00 |
| “ Phosphoric, U. S. P. | “ | .10 |
| “ Ditto, Glacial, C. P. T. | “ | .25 |
| “ Phosphorous, C. P., Sol. | “ | .50 |
| “ Phenic, Crystals, Pure. | “ | .25 |
| “ Phosphomobybdic, Sol. | “ | 1.00 |
| “ Phosphowolframic, Sol. | “ | .60 |
| “ Pyrogallic, Leviss, C. P. T. | “ | 2.00 |
| “ Ditto, Alb. Sub. Puriss. | “ | 1.25 |
| “ Pyroligneous, Refined. | Per lb., | .40 |
| “ Prussic, “ Scheeles ” | Per oz., | .50 |
| “ Salicylic. | Per dr., | 1.00 |
| “ Pictric, True. | Per oz., | .75 |
| “ Silicic, Pure Native, Pow'd. | Per lb., | .10 |
| “ Ditto, C. P., Precc., T. | Per oz., | .50 |
| “ Succinic, Pure Alb. Cryst. | “ | 1.00 |

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| Acid , Stearic, Puriss., for delicate analysis..... | Per dr., | \$.50 |
| “ Ditto, Com..... | Per oz., | .10 |
| “ Suberic | Per dr., | .10 |
| “ Sulphuric, C. P., 1 and 9 lb. bottles..... | Per lb., | .45 |
| “ Ditto, Com'l..... | “ | .07 |
| “ Ditto, Nord, in cans and bottles..... | “ | .60 |
| “ Ditto, per Carboy, special price. | | |
| “ Tannic, C. P., Leviss..... | Per oz., | .50 |
| “ Ditto, Pure..... | “ | .25 |
| “ Tartaric, Pure, Cryst..... | Per lb., | 1.25 |
| “ Ditto, C. P., for accurate analysis..... | “ | 2.00 |
| “ Ditto, Powdered, Com..... | “ | .90 |
| “ Titannic..... | Per dr., | .50 |
| “ Uric, C. P., Cryst..... | “ | .30 |
| “ Uranic, Com..... | Per oz., | 1.35 |
| “ Valerianic..... | Per dr., | 1.25 |
| “ Vanadic, C. P..... | Per gr., | .15 |
| “ Wolframic. See Tungstic Acid..... | Per oz., | .50 |
| Alcohol , 95 c. c.; special price large quantity..... | Per gal. | 3.00 |
| “ Absolute | “ | 1.50 |
| “ Ammoniated..... | “ | .60 |
| “ Amylic..... | “ | .75 |
| “ Methylc, nearly inodorous and free from Amylic Alcohol. This will be found to be an excellent and cheap substitute for Wine Alcohol in all heating operations. It possesses decidedly greater heating power than Wine Alcohol, and is recommended to the attention of all chemists and experimenters living where gas cannot be procured or used. Per gal., \$1.50, by the keg or cask..... | “ | 1.25 |
| Albumen , from blood..... | Per dr., | .20 |
| “ “ milk | “ | .50 |
| “ “ eggs..... | “ | 1.00 |
| Aldehyde | Per oz., | .50 |
| Aluminum , Mett, foil..... | “ | 2.50 |
| “ “ wire | “ | 3.00 |
| “ Chloride, C. P..... | “ | .50 |

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| Aluminum , Fluoride. Native; see Minerals..... | Per lb., \$ | .50 |
| Alumina , Precc., Puriss., hydrated..... | Per lb., | .75 |
| “ Acetate | “ | .30 |
| “ Bromide..... | Per oz., | .75 |
| “ Sulphate, Pure Cryst. Leviss..... | Per oz., | .20 |
| “ “ and Ammonia, Puriss..... | Per lb., | 1.00 |
| “ “ “ “ Crude, Com.... | “ | .10 |
| “ Ammonia, Cryst. and Pulv..... | “ | .10 |
| Alum , Potassa | “ | .10 |
| “ Iron | Per oz., | .10 |
| “ Chrome, Chryst., Pure..... | “ | .10 |
| “ Ammonia, Ferric..... | Per lb., | .75 |
| Amber , small pieces..... | Per oz., | .10 |
| Ammonia , Aqua, Conc., U. S. P., 4 lb. bottles..... | Per lb., | .30 |
| “ Liquor. F. F. F., 26½ per cent. of gas..... | Per lb., | .35 |
| | Per oz., | .05 |
| “ Spirits, U. S. P..... | Per lb., | .20 |
| “ Acetate, Cryst., C. P..... | Per oz., | .75 |
| “ Ditto, Sol., C. P..... | “ | .50 |
| “ Arseniate..... | “ | .30 |
| “ Benzoate, C. P..... | “ | 1.25 |
| “ Bichromate..... | “ | .50 |
| “ Bromide..... | “ | .20 |
| “ Carbonate, pure..... | Per lb., | 1.25 |
| “ Ditto, Com..... | “ | .30 |
| “ Citrate and Citrate Iron..... | Per oz., | .25 |
| “ Citrate..... | Per lb., | 2.60 |
| “ Gallate, pure..... | Per dr., | .50 |
| “ Hydrosulphide, Liq..... | Per lb., | 1.00 |
| “ Hydrofluorate, Cryst., C. P..... | Per oz., | 1.25 |
| “ Hypophosphite..... | “ | .50 |
| “ Molybdate, C. P., Cryst..... | “ | 1.00 |
| “ Monocarbonate, C. P..... | Per lb., | 2.00 |
| “ Chloride, C. P..... | “ | .60 |
| “ Ditto, Com'l..... | “ | .35 |
| “ Nitrate, Cryst., C. P..... | Per lb., \$1.00, Per oz., | .10 |
| “ “ fused Am., Pure..... | Per lb., | .75 |
| “ Oxalate, C. P., Cryst..... | Per lb., \$2.50, Per oz., | .20 |
| “ Phosphate, Cryst., Pure..... | “ | .20 |

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| Ammonia , Succinate, T., Cryst. | Per oz., \$1.25 |
| “ Sulphate, Com. | Per lb., .20 |
| “ “ C. P. | “ 1.25 |
| “ Sulphocyanide. | Per lb., \$4.00, Per oz., .30 |
| “ Urate, C. P. | “ .50 |
| “ Valerianate. | “ 1.25 |
| “ Vanadate. | Per gr., .30 |
| Amygdalin | Per dr., .50 |
| Amyle , Acetate. | Per oz., 1.00 |
| “ Butyrate. | “ 1.00 |
| “ Formate. | “ 1.00 |
| “ Nitrite, Pure. | “ 1.25 |
| “ Valerianate. | “ 1.00 |
| “ Hydrochlorate. | “ 1.00 |
| Amalgam , Mereury. | Per box, .75 |
| “ Fusible. | “ .50 |
| Antimony , Chloride, Sol. | Per lb., .50 |
| “ “ Cryst., C. P. | Per oz., .50 |
| “ Iodide, Cryst., C. P. | “ .25 |
| “ Proto Oxide, white, C. P. | “ .25 |
| “ Golden Sulphide. | Per lb., .75 |
| “ Black “ Levigated. Per lb., .40, Per oz., .05 | |
| “ Ditto, Native. | Per lb., .25 |
| “ Tartrate, Cryst., Pure. | “ 2.50 |
| “ Ditto, and Tart Potassa. | “ 2.00 |
| “ Mett, Best. | “ .40 |
| Aniline , Pure, Liq. | “ 4.00 |
| “ Sulphate, C. P. | Per oz., .75 |
| “ Red. | “ 1.50 |
| “ Scarlet. | “ 1.25 |
| “ Blue. | “ 2.00 |
| “ Violet. | “ 1.60 |
| “ Pink. | “ 1.25 |
| “ Green. | “ 2.50 |
| “ Black. | “ 1.50 |
| “ Yellow. | “ 1.00 |
| “ Orange. | “ 2.00 |
| “ Purple. | “ 2.00 |
| Animal Charcoal , Gran., Best. | Per lb., .13 |

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| Animal Charcoal, Com. | Per lb., \$ | .10 |
| “ “ Pulv. Fine..... | “ | .20 |
| Arsenic, Native Mett. | “ | 1.00 |
| “ Pulverized | “ | 1.25 |
| “ Bromide..... | Per oz., | 1.50 |
| “ Iodide..... | “ | 1.00 |
| “ Chloride | “ | 1.75 |
| “ Oxide Proto. See Acids. | | |
| “ “ Per “ “ | | |
| “ Sulphide Per..... | Per lb., | .50 |
| “ “ Proto | “ | .30 |
| Argols, Crude | “ | .16 |
| “ Refined | “ | .45 |
| Asparagin, C. P. | Per dr., | 1.00 |
| Asphaltum, Opt. | Per lb. | .25 |
| Asbestos, Long Fibre | Per oz., | .15 |
| “ Short “ | Per lb., | .25 |
| Atropia, Pure | Per gr., | .12 |
| “ Sulphate | “ | .12 |

B.

| | | |
|-------------------------------------|------------------------|------|
| Barium, Chloride, Com. | Per lb., .40, Per oz., | .05 |
| “ “ C. P..... | “ .50, “ | .10 |
| “ “ Puriss., T..... | Per lb. | 1.00 |
| “ Fluoride | Per oz., | 2.00 |
| “ Mett., Spec..... | Per lb., | 1.00 |
| “ Iodide, C. P..... | Per oz., | 1.00 |
| “ Hyperoxide, C. P., T..... | “ | .60 |
| “ Proto-oxide, “ | “ | .40 |
| “ Sulphide | “ | .10 |
| Baryta, Acetate | “ | .20 |
| “ Caustic, Cryst., C. P..... | Per lb., \$2.00, “ | .20 |
| “ Carb., Native..... | Per lb. | .25 |
| “ “ Precc., C. P., T..... | “ | 1.50 |
| “ Chlorate, C. P., T..... | Per oz., | .50 |
| “ Nitrate, Cryst., C. P..... | Per lb., | .85 |
| “ “ Com'l..... | “ | .50 |
| “ Sulphate..... | “ | .15 |
| “ “ Opt., Pure..... | Per oz., | .10 |

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|--|---------------------------|------|
| Baryta , Water, per fluid oz..... | Per oz., \$ | .05 |
| Beeswax , White..... | " | .10 |
| " Yellow | Per lb., | .40 |
| Berberine , Pure..... | Per dr., | .75 |
| " Sulphate | " | .60 |
| Benzoin , Gum..... | Per oz., | .10 |
| Benzole , Genuine..... | Per pt., | .75 |
| Benzine | " | .25 |
| Bismuth ; Mett..... | Per oz., | .50 |
| " Ammoniocitrate..... | " | 1.50 |
| " Mett, Puriss..... | " | 1.00 |
| " Acetate, Pure..... | " | .25 |
| " Carb..... | " | .50 |
| " Chloride..... | " | .50 |
| " Oxide, Hydrated..... | " | .75 |
| " Nitrate, Cryst..... | " | .60 |
| " Sub. ditto, Powdered..... | " | .40 |
| " Tannate..... | " | 1.75 |
| " Valerianate, C. P..... | " | 3.00 |
| Black Flux | Per lb., | 2.00 |
| Bone-Ash , Am. (by the bbl., or 50 lbs., or more, special price)..... | " | .35 |
| " French..... | " | .40 |
| " Washed..... | " | .50 |
| Bleaching Powder | " | .20 |
| Borax , Refined..... | " | .60 |
| " Glass..... | Per lb., \$3.00, Per oz., | .25 |
| " Pulverized..... | " | .10 |
| Brazil Wood , True..... | Per lb., | .25 |
| Bromoform , C. P..... | Per oz., | 3.00 |
| Bromine , Pure..... | " | .40 |
| " Chloride..... | " | 1.00 |
| Brucia , C. P..... | Per oz., \$6.00, Per dr., | .75 |
| " Nitrate..... | " | .75 |

C.

| | | |
|---|----------|-----|
| Cadmium , Mett, in stick; Pure, T..... | Per oz., | .50 |
| " " Ribbon..... | " | .75 |
| " Bromide..... | " | .05 |

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|----------------------|--------------------------------|---------------|-------|
| Cadmium, | Carbonate | Per oz., \$ | .75 |
| " | Chloride..... | " | .75 |
| " | Iodide..... | " | .75 |
| " | Sulphide..... | " | 1.00 |
| " | Oxide..... | " | .75 |
| " | Sulphate..... | " | .50 |
| Caffeine, | Pure; very superior..... | " | 9.00 |
| " | Citrate..... | Per dr., | .75 |
| Casein, | " Pure..... | Per oz., | .20 |
| Calcium, | Mett, per Spec..... | " | 1.00 |
| " | Acetate, C. P..... | " | .25 |
| " | Carb., Precc.; Pure..... | Per lb., | .40 |
| " | Chloride, Fused; C. P., T..... | " | 1.25 |
| " | " Gran'l "..... | " | 1.00 |
| " | " Cryst. "..... | " | .50 |
| " | Bromide, Pure..... | Per oz., | .75 |
| " | Iodide..... | " | .75 |
| " | Nitrate, C. P., Cryst..... | " | .15 |
| " | Fluoride, Pow'd..... | Per lb., | .20 |
| " | " Cryst., native selected..... | " | .20 |
| " | Phosphide, Pure, T..... | Per oz. | .75 |
| " | Phosphate..... | Per lb., .75, | " .10 |
| " | Sulphide..... | " | .10 |
| Camphor, | Best Borneo..... | " | .10 |
| Carbon, | Bisulphide..... | Per lb., | .60 |
| " | Trichloride, Liquid..... | Per oz., | .50 |
| Carbo, | Animalis..... | Per lb., | .13 |
| Carmine, | Opt..... | Per oz., | 1.00 |
| Cerium, | Mett, per specimen..... | " | 1.00 |
| " | Chloride..... | " | 2.50 |
| " | Nitrate..... | " | 2.25 |
| " | Oxalate, Pure..... | " | 1.25 |
| Cesium, | Chloride..... | Per gr., | .15 |
| " | and Rubidium, Chloride..... | " | .15 |
| Cethyle | | Per lb., | 1.00 |
| Chameleon, | Mineral, Pure..... | Per oz., | .12 |
| Chloral, | Hydrate..... | " | .35 |
| Chlorine, | Aqueous Sol. of..... | Per lb., | .25 |
| Charcoal, | Willow, Pow'd, Pure..... | " | .35 |

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|---|---------------------------|--------|
| Charcoal , Willow, Prepared in blocks..... | Each, | \$.10 |
| Chloroform , Opt..... | Per lb., \$2.00, Per oz., | .20 |
| Chromium , Mett, per specimen..... | " | 1.00 |
| Chrome , Alum. See Alums. | | |
| Chromium , Chloride, C. P..... | " | 2.00 |
| " Sesqui Chloride..... | " | 2.00 |
| " " Oxide..... | " | .35 |
| " Green "..... | " | 1.25 |
| " Carb..... | " | 1.00 |
| Cinnabar . See Minerals. | | |
| Copper , Acetate, C. P., Cryst..... | " | .50 |
| " " Com., Puly'd..... | " | .10 |
| " Arseniate..... | " | .50 |
| " Arsenite..... | " | .50 |
| " Ammoniated, C. P., T..... | " | .12 |
| " Carbonate, C. P., Precc..... | " | .12 |
| " Chloride, C. P., T..... | " | .20 |
| " " Di. "..... | " | .25 |
| " Chromate..... | " | .20 |
| " Cyanide, C. P..... | " | 1.00 |
| " Formate..... | Per dr., | .40 |
| " Iodide, C. P..... | Per oz., | 1.00 |
| " Nitrate, Cryst., C. P., T..... | Per lb., \$1.50, | " .15 |
| " Oxalate..... | " | .25 |
| " Oxide, C. P., Gran. Pow'd, T..... | Per lb., \$2.50, | " .20 |
| " " Pure, Pow'd, | " 2.00, | " .20 |
| " Reduced Puriss, Pow'd..... | " | .40 |
| " Mett, Pure Gran..... | Per lb., \$1.25 | " .15 |
| " " Thin Foil, Pure..... | " .75 | " .10 |
| " Sheet..... | " .50 | " .05 |
| " Scraps..... | " .40 | " .05 |
| " Turnings..... | " .40 | " .05 |
| " Sulphate, C. P., T..... | " .50 | " .10 |
| " " Com'l..... | " .20 | " .05 |
| " Ammoniated..... | " | .15 |
| " Sulphide..... | " | .10 |
| Cobalt , Acetate, C. P..... | " | 1.00 |
| " Mett, Cubes..... | " | 1.25 |
| " " C. P., T..... | " | 2.50 |

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|--|----------------|--------|
| Cobalt, Chloride, C. P., T..... | Per oz., | \$1.00 |
| “ Carb., C. P., T..... | “ | 1.00 |
| “ Nitrate, C. P., T..... | “ | 1.00 |
| “ “ C. P., Sol. F. T..... | “ | .25 |
| “ Oxalate, C. P., T..... | “ | 1.25 |
| “ Oxide, C. P..... | “ | 1.00 |
| “ “ Com'l..... | “ | .12 |
| Codeia, Pure..... | Per gr., | .08 |
| Collodion, E. Sol..... | Per oz., | .20 |
| “ Cotton. Best Pavys'..... | “ | .75 |
| Conine, Pure German..... | Per dr., | 1.50 |
| Cream Tartar, Pow'd..... | Per lb., | .60 |
| Creasote, White..... | Per oz., | .25 |
| Crocus-Martis, | Per lb., .60 “ | .05 |
| Cryolite, Best. See also Minerals... Per lb., | .25 to .50 | |

D.

| | | |
|-----------------------------------|---------------|------|
| Dextrine, Opt., Pow'd..... | Per lb., | .30 |
| Distilled Water | Per gal., | .20 |
| Dutch Leaf | Per book, | .10 |
| Didymium, Chloride..... | Per specimen, | 1.00 |

E.

| | | |
|------------------------------|--------------|-------------|
| Ether, Sulphuric..... | Lot, .60.... | Per lb., 90 |
| “ “ Veritable, Conc..... | “ | 1.00 |
| “ Acetic, Pure Conc..... | Per oz., | .15 |
| “ Butyric..... | “ | .50 |
| “ Chloric..... | “ | .20 |
| “ Formic..... | “ | .50 |
| “ Nitric, Spirits of..... | Per lb., | .75 |
| “ Oneanthic, Pure..... | Per oz., | 1.00 |
| Emery, Flour..... | Per lb., | .25 |
| “ Pow'd..... | “ | .20 |

F.

| | | |
|--|----------|-----|
| Fehling's Sol., for physicians' and sugar-house use, indicating percentage of grape sugar..... | Per oz., | .20 |
| Felspar, Pow'd, White..... | Per lb., | .25 |
| “ Native, Cryst..... | “ | .10 |

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|--|-------------|------|
| Fire Clay, Fine | Per lb., \$ | .60 |
| Fluor Spar, Cryst | " | .15 |
| " " Pow'd..... | " | .20 |
| Formyle, Chloride | Per oz., | 2.50 |
| " Bromide | " | 3.00 |
| " Iodide | Per dr., | .75 |
| Fusible Metal | Per oz., | .40 |
| Fusel Oil, Pure | Per lb., | .75 |
| Fruit Essences, Artificial; all varieties kept. | | |

G.

| | | |
|--|----------|------|
| Galena, Fine, for Blow-pipe work | " | .30 |
| Galls, Ground | Per oz., | .10 |
| " Tincture of..... | " | .15 |
| Glass of Borax | " | .20 |
| Glucina, Carbonate | Per dr., | 1.50 |
| " Hydrate | " | 1.50 |
| Glucose, in lumps | Per lb., | .50 |
| Glycerine, Puriss.; water free, T | " | 1.00 |
| " Best American; very fine; free from lead and all earthy matters..... | " | .60 |
| Gum, Arabic, picks | " | .90 |
| " " sorts..... | " | .60 |
| " Benzoin..... | Per oz., | .10 |
| " Tragacanth..... | " | .10 |
| Gums, of all kinds, at lowest market rates. | | |
| Gold, Chloride, Sol | " | 2.00 |
| " Ditto, Dry, Pure, 15 gr. bottles..... | " | 1.50 |
| " Oxide..... | Per gr., | .10 |
| " Metallic Leaf, xx Deep, Per book,..... | | .75 |
| Graphite, Pow'd | Per lb., | .20 |
| " In Lump..... | " | .25 |
| Gutta Percha. Pure. In Sticks | Per oz., | 1.00 |
| Gypsum, Pulv | Per lb., | .10 |
| Gelatine, Pure | Per oz., | .10 |

H.

| | | |
|---------------------------|----------|-----|
| Hæmatoxyline | Per gr., | .10 |
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I.

| | | |
|--|------------------------|--------|
| Indigo , Pure, Best Bengal..... | Per oz., | \$.15 |
| “ Sulphate Sol..... | “ | .10 |
| Iodine , Pure, Resublimed, T..... | “ | .75 |
| “ Crude..... | “ | .50 |
| Iridium , Mett..... | Per specimen, | 1.00 |
| “ Chloride..... | Per gr., | .03 |
| Iridosmium | “ | .03 |
| Indium , Mett..... | Per specimen, Per lb., | 1.00 |
| Iron , by Hydrogen, Pure..... | Per oz., | .35 |
| “ Pulv., Sub., Pure..... | “ | .10 |
| “ Wire, Pure... .. | “ | .25 |
| “ Acetate..... | “ | .10 |
| “ Ammoniated..... | “ | .10 |
| “ Limatura, Alcoholized..... | Per lb., .50, | “ .10 |
| “ Arseniate..... | “ | .60 |
| “ Bromide..... | “ | 1.00 |
| “ Carbonate, Precc..... | Per lb., .40, | “ .10 |
| “ “ Proto, Precc..... | “ | .10 |
| “ Chloride, Sesqui, Sol..... | Per lb., .60, | “ .10 |
| “ “ “ Fine Cryst., C. P. . | “ \$3.00, | “ .25 |
| “ “ “ Proto..... | “ .75, | “ .10 |
| “ Chromate, Native..... | Per lb., | .25 |
| “ Citrate, U. S. P..... | Per oz., | .20 |
| “ “ and Ammonia..... | “ | .20 |
| “ “ and Manganese..... | “ | .25 |
| “ “ and Magnesia..... | “ | .25 |
| “ Ferrocyanide, Pure..... | “ | .20 |
| “ “ Com..... | “ | .10 |
| “ Filings..... | Per lb., | 10. |
| “ Iodide, C. P..... | Per oz., | 1.00 |
| “ “ Com..... | “ | .75 |
| “ Lactate, Pure... .. | “ | .30 |
| “ Oxide, Hydrated Peroxide..... | Per lb., | 1.00 |
| “ “ Proto..... | Per oz., | .10 |
| “ “ Red Oxide, Precc..... | Per lb., | .20 |
| “ “ Black Oxide, C. P..... | Per oz., | .15 |
| “ “ “ Com'l..... | Per lb., .75, | “ .10 |

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|-------------------------------------|------------------------------|------|
| Iron, Nitrate, Per. Sol..... | Per lb., \$1.00, Per oz., \$ | .10 |
| “ Phosphate, Proto..... | “ 1.00, “ | .10 |
| “ “ Per..... | “ 1.25, “ | .12 |
| “ Pyrophosphate, in Plates..... | “ | .25 |
| “ Sulphate, C. P., Cryst..... | Per lb., | .15 |
| “ “ Dried..... | “ | .35 |
| “ “ and Ammonia, C. P..... | “ | .30 |
| “ “ and Potassa..... | Per lb., .90, Per oz., | .10 |
| “ “ Sub., Pure..... | “ | .20 |
| “ Sulphide, Fused, Opt..... | Per lb., | .30 |
| “ “ Gran..... | “ | .35 |
| “ Tannate, Pure..... | Per oz., | .60 |
| “ Tartrate..... | “ | .50 |
| “ “ and Ammonia..... | “ | .20 |
| “ Tersulphate, Sol., Opt..... | Per lb., | 1.00 |
| “ “ and Potassa..... | Per oz., | .20 |
| “ Tungstate..... | Per lb., | .60 |
| “ Valerianate..... | Per oz., | 1.00 |

J.

Jalapine,.....Per dr., .50

K.

Kermes, Mineral.....Per lb., 2.50
Kaolin, Pure, White.....“ .20
Kreatine.....Per specimen, 1.00

L.

Lead, Acetate, C. P., T.....Per lb., 1.00
 “ “ Com'l.....“ .50
 “ “ Tribasic.....Per oz., .40
 “ “ Sub., Sol.....Per lb., .40
 “ Bichromate, Pure.....Per oz., .20
 “ Carb., Neutral.....Per lb., .60
 “ “ Native. See Minerals.
 “ Chloride, C. P.....Per oz., .10
 “ Chromate, for Organic Analysis.....“ .20
 “ Hyposulphite.....“ .15
 “ Iodide.....“ .60

| | | |
|---|-------------|------|
| Lead, Mett, C. P., in drops, for Assay purposes..... | Per lb., \$ | .75 |
| “ Nitrate, Pure..... | “ | .40 |
| “ Oxide, Red..... | “ | .30 |
| “ “ Proto, Pure..... | “ | .18 |
| “ “ | Per oz., | .20 |
| “ Phosphate, Pure..... | “ | .30 |
| “ Sulphate, C. P..... | Per lb., | .60 |
| “ Tartrate, Pure..... | Per oz., | .20 |
| “ Tannate | “ | .40 |
| Lithia, Carbonate, C. P..... | “ | 2.00 |
| “ Citrate | Per dr., | 1.00 |
| “ Sulphate..... | “ | .50 |
| Lime, Chloride, Com'l..... | Per lb., | .20 |
| Lithium, “ C. P..... | Per dr., | .50 |
| “ Bromide | Per oz., | 3.00 |
| “ Iodide | “ | 3.25 |
| Litmus. In Cubes, Pure..... | “ | .10 |
| “ Paper, Blue and Red..... | Per sheet, | .05 |
| Logwood. In Chips..... | Per lb., | .10 |
| “ Extract..... | Per oz., | .10 |
| “ In Billets | Per billet, | .50 |
| Lupiline | Per oz., | .20 |
| Lycopodium | “ | .20 |

M.

| | | |
|-------------------------------|----------------|--------|
| Magnesia, Caustic..... | Per lb., | 2.00 |
| “ Carbonate, Precc..... | Per oz., | .10 |
| “ Native. See Minerals. | | |
| “ Citrate, Pure..... | Per lb., | .20 |
| “ Nitrate..... | Per oz., | .12 |
| “ Hypophosphite..... | “ | 1.25 |
| “ Phosphate..... | “ | .25 |
| “ Sulphate, C. P..... | Per lb., | .25 |
| “ Valerianate | Per dr., | .30 |
| “ Sulphate, Com'l..... | Per lb., | .10 |
| “ Sulphite | Per oz., | .15 |
| Magnesium, Ribbon..... | Per foot, .06, | “ 3.25 |
| “ Wire..... | “ .06, | “ 3.00 |
| “ Bromide..... | “ | 1.00 |

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|--|------------------------------------|
| Magnesium , Iodide..... | Per oz., \$1.00 |
| “ Chloride, C. P..... | Per lb., 1.00 |
| Manganese , Mett | Per specimen, 1.00 |
| “ Acetate..... | Per oz., .40 |
| “ Bromide..... | “ 2.25 |
| “ Carbonate..... | “ .30 |
| “ Citrate..... | “ .60 |
| “ Per Oxide; high test; Pulv..... | Per lb., .12 |
| “ Chloride, Pure..... | Per oz., .40 |
| “ Hypophosphite | “ 1.00 |
| “ Iodide..... | “ 1.50 |
| “ Phosphate..... | “ .60 |
| “ Nitrate..... | “ .50 |
| “ Sulphate, C. P., Cryst..... | Per lb., \$2.50 “ .30 |
| Mannite | “ .50 |
| Meconin | Per dr., 1.50 |
| Morphia , Pure Alkaloid. | Price, per $\frac{1}{8}$ oz., 2.00 |
| “ Bimeconate..... | “ “ 2.75 |
| “ Chloride | “ “ 1.50 |
| “ Nitrate | “ “ 2.00 |
| “ Sulphate..... | “ “ 1.50 |
| “ Valerianate | “ “ 1.50 |
| Mosaic , Gold | Per oz., .25 |
| Mercury , Redistilled, Best,..... | Per lb., 1.25 |
| “ “ in quantities, special price. | |
| “ Acetate | Per oz., .60 |
| “ Bromide..... | “ 1.00 |
| “ Chloride, Proto..... | “ .15 |
| “ “ Per Am..... | “ .10 |
| “ Cyandide, T..... | “ .20 |
| “ Chloride, C. P. T., Per..... | “ .15 |
| “ Iodide, Proto..... | “ .75 |
| “ “ Deuto..... | “ .75 |
| “ Oxide, Black..... | “ .40 |
| “ “ Proto, Red..... | “ .15 |
| “ “ Yellow..... | “ .25 |
| “ Sulphide, Black..... | “ .10 |
| “ “ Red | “ .20 |
| “ Sulphocyanide..... | “ .40 |

| | | |
|---------------------------------------|---------------------------|------|
| Mercury, Sulphate, Basic | Per oz., \$ | .20 |
| “ “ Neutral..... | “ | .25 |
| “ Nitrate, Proto, T..... | “ | .20 |
| “ “ Per, T..... | “ | .35 |
| Methylene | Per lb., | 1.00 |
| Minium, Opt. | “ | .25 |
| Microcosmic Salt, Pure | Per lb., \$2.25, Per oz., | .15 |
| Molybdenum, Mett. | Per specimen, Per lb., | 1.00 |
| “ Oxide, C. P..... | Per oz., | .75 |
| “ Sulphide..... | “ | .75 |
| Menisperin, Pure | | 2.50 |

N.

| | | |
|--|------------------------|------|
| Naptha, Refined | Per lb., | .50 |
| “ Wood..... | “ | 1.00 |
| Naphaline, Pure, T. | Per lb., \$3.00, “ | .25 |
| Narceia | Per gr., | .25 |
| Narcotine, C. P. | Per $\frac{1}{8}$ oz., | .50 |
| Nessler's Solution, for delicate Ammonia reactions, | | |
| | Per fluid oz., | .25 |
| Nickel, Mett, Cubes | Per oz., | .40 |
| “ Carb, Pure..... | “ | .75 |
| “ Chloride, T..... | “ | 1.00 |
| “ Nitrate, C. P. T..... | “ | 1.00 |
| “ Oxalate, “..... | “ | 1.00 |
| “ Oxide..... | “ | .75 |
| “ Sulphate, C. P..... | “ | 1.00 |
| “ “ and Ammonia..... | “ | 1.00 |
| Nicotine. | Per gr., | .10 |
| Nitrobenzol | Per oz., | .10 |

O.

Ores and Minerals. See Minerals and Fossils.

| | | |
|--|---------------|------|
| Osmium, Mett. | Per specimen, | 1.00 |
| Olive Oil, True | Per pt., | 1.00 |
| Oils, Essential; all varieties kept; True | | |
| “ Fixed; “ “..... | | |

P.

| | |
|--------------------------------------|-------------------------------|
| Palladium , Mett | Per specimen, \$1.00 |
| “ Chloride, 1 dr. bottles..... | Per lb., 10.00 |
| Parafine , Opt., Pearl..... | “ .60 |
| Phosphorus . In Sticks..... | Per lb., \$2.00, Per oz., .25 |
| “ Amorphous..... | “ .40 |
| “ Chloride..... | Per dr., .75 |
| Pancreatine | “ 1.00 |
| Picrotoxine , Pure..... | Per $\frac{1}{8}$ oz., .50 |
| Pyroxilic Spirit , Pure..... | Per qt., .50 |
| Piperine | Per oz., 1.50 |
| Pepsine , Best, Refined..... | Per dr., 1.00 |
| Phloridizine | “ 1.00 |
| Platinum , Chloride, Sol..... | Per oz., 1.25 |
| “ “ Dry, T..... | “ 10.00 |
| “ “ and Sodium..... | Per dr., 1.50 |
| “ Sponge..... | Per gr., .03 |
| “ “ for Hydroplatinic Lamp..... | Each, .50 |
| “ Wire..... | Per gr., $.2\frac{1}{2}$ |
| “ Sheet | “ $.2\frac{1}{2}$ |
| “ Plate..... | “ .03 |
| Potassa , Acetate, Pure..... | Per oz., .10 |
| “ Antimoniate | “ .30 |
| “ Arseniate..... | “ .20 |
| “ Arsenite..... | “ .20 |
| “ Bicarbonate, C. P..... | Per lb., .50 |
| “ “ Com'l..... | “ .10 |
| “ Bichromate..... | “ .40 |
| “ “ Puriss | Per oz., .10 |
| “ Binoxalate | “ .10 |
| “ Boro-Tartrate..... | “ .10 |
| “ Bisulphate, C. P..... | Per lb., 1.00 |
| “ Bitartrate, Cryst..... | “ .60 |
| “ “ Puriss., T..... | “ 1.25 |
| “ “ Pow'd | “ .60 |
| “ Bromide | Per oz., .18 |
| “ Carbonate, C. P., Sicc. | Per lb., 2.00 |
| “ “ Com..... | Per lb., .25 to .40 |

| | | |
|--|---------------------------|--------|
| Potassa , Carbonate and Carb. Soda, C. P..... | Per lb., | \$2.00 |
| “ Caustic, Fused, White, C. P. T..... | “ | 2.00 |
| “ “ “ Brown..... | “ | .60 |
| “ “ “ C. P., Am..... | “ | .85 |
| “ “ “ Dep. Alcohol, Puriss..... | “ | 2.50 |
| “ Chlorate, Cryst., Best..... | “ | .70 |
| “ “ Puriss..... | “ | .75 |
| “ Chromate, Pure..... | Per lb., \$2.00. Per oz., | .15 |
| “ “ Com..... | Per lb., | 1.00 |
| “ Citrate..... | Per lb., \$1.50. Per oz., | .12 |
| “ Cyanide, Fused, Alb., Opt..... | “ 1.00. “ | .10 |
| “ “ “ “ In 10 lb. cans..... | Per lb., | .85 |
| “ “ “ “ C. P. T., Per lb., \$1.50, Per oz., | | .12 |
| “ Chloride, C. P., T..... | “ .75 “ | .10 |
| “ Ferrocyanide, Pure..... | “ .75 “ | .15 |
| “ Ferridcyanide “..... | “ \$1.00 “ | .10 |
| “ Fluoride, C. P., T..... | “ | 1.25 |
| “ Hypochlorate..... | “ | .50 |
| “ Hypophosphite..... | “ | .50 |
| “ Iodide, Pure Cryst (variable price) per lb. \$6.50 | “ | .50 |
| “ “ Fused Puriss, T..... | “ | .75 |
| “ Iodate..... | “ | 1.00 |
| “ Hypermanganate..... | Per lb., \$3.30 “ | .40 |
| “ Manganate..... | “ 1.00 “ | .40 |
| “ Lactate..... | “ | 1.25 |
| “ Liquor..... | Per lb., .40 “ | .10 |
| “ Nitrate Cryst..... | Per lb., | .35 |
| “ “ C. P., Gran..... | “ | .60 |
| “ Phosphate, Pure..... | “ | 3.50 |
| “ Nitrite, Pure, T..... | Per oz., | .40 |
| “ Oxalate..... | “ | .25 |
| “ “ Bin..... | “ | .10 |
| “ Pictrate, very scarce..... | “ | 2.50 |
| “ Silicate, Sol., C. P., T..... | “ | .20 |
| “ “ Dry “ “..... | “ | .25 |
| “ Sulphate, Cryst., Pure..... | Per lb., | .25 |
| “ “ Pulv..... | “ | .28 |
| “ Sulphite, Cryst..... | Per oz., | .10 |
| “ Sulphide, Fused..... | Per lb., .50, “ | .10 |

| | | |
|---|---|------|
| Potassa, Tartrate, Cryst. | Per oz., \$ | .10 |
| Potassium. In $\frac{1}{4}$ oz. vials..... | Per oz., \$5.00, Per $\frac{1}{4}$ oz., | 1.50 |
| “ Sulphocyanide..... | Per oz., | .50 |
| Propylamin, Pure. | Per $\frac{1}{8}$ oz., | .50 |
| “ Chloride..... | “ | 1.00 |
| Proteine | Per oz., | 5.00 |
| Prussian Blue | “ | .10 |

Q.

| | | |
|---------------------------|------------------------|------|
| Quinia, Pure | Per $\frac{1}{8}$ oz., | .75 |
| “ Acetate | Per oz., | 4.50 |
| “ Arseniate..... | “ | 8.00 |
| “ Chloride | Per dr., | .75 |
| “ Sulphate..... | Per oz., \$3.25, “ | .45 |

R.

Rare Resinoids—Podophyllin, Leptandrin, Cimicifugin, Macrotin, Alnuine, Ampelopsine, Apocynin, Asclepidin, Baptisin, Barosmin, Caulophyll, Cerasine, Chelonine, Colocynthine, Cornine, Corydalia, Cypripedine, Digitalin, Dioscorein, Eryngine, Euonymine, Eupatoidin, Eupatorine, Eupurpurin, Fragerin, Gelseminine, Geranine, Hamamelin, Helonin, Humulin, Hydrastine, Hydrastin, Hydrastia Mur., Hydrastia Sulp., Hyoseyamine, Irisin, Jalapin, Juglandin, Lobelin, Menispermin, Myricin, Panduratin, Phytolacin, Populin, Prunine, Rhusin, Rumicin, Sanguinarina, Sanguinarina Sulph., Scutellarine, Senecionine, Stillingine, Trillin, Veratrin, Verbenine, Viburnin, Xanthoxylin.

| | | |
|--|---------------|------|
| Rheine, Tilden's | Per oz., | 6.00 |
| Rhodium, Mett | Per specimen, | 1.00 |
| Rubidium, Chloride | Per gr., | .10 |
| Rhigoline, Inodorous; Sp. Grav. 620 | Per botl., | .75 |
| Ruthenium, Mett | Per specimen, | 1.00 |

S.

| | | |
|--------------------------------|----------|---------------|
| Salicine | “ | Per oz., 1.00 |
| Sanguine, Best Fr | Per lb., | 1.00 |

| | | |
|---------------------------------------|----------------------------|--------|
| Selenium | Per specimen, | \$1.00 |
| Silicium | “ “ | 1.00 |
| Santonin , Pure, Alkaloid..... | Per oz., | 1.50 |
| Silica , Fine ground..... | Per lb., | .10 |
| Silver , Mett Foil..... | Per oz., | 2.00 |
| “ Gran., Pure..... | “ | 4.00 |
| “ Leaf, “..... | Per book, | .25 |
| “ Acetate, Pure | Per oz., | 3.50 |
| “ Bromide | “ | 3.00 |
| “ Chloride | “ | 2.00 |
| “ Cyanide | “ | 3.00 |
| “ Carbonate | Per $\frac{1}{8}$ oz., | .50 |
| “ Iodide, Pure..... | Per oz., | 3.50 |
| “ Nitrate, C. P., Cryst..... | “ | 1.25 |
| “ Oxide | “ | 2.25 |
| “ Sulphate, Pure..... | “ | 3.50 |
| Soda , Acetate..... | Per lb., | 1.00 |
| “ Arseniate..... | Per oz., | .30 |
| “ Arsenite | “ | .15 |
| “ Bicarbonate, Eng., Best..... | Per lb., | .10 |
| “ “ C. P..... | “ | .75 |
| “ Bromide | Per oz., | .50 |
| “ Bromide, C. P..... | Per lb., | .50 |
| “ Biborate, Puriss..... | “ | .75 |
| “ Bisulphate, Pure..... | “ | 1.00 |
| “ Bisulphite, C. P..... | “ | 2.00 |
| “ Carbonate, Cryst., C. P., T..... | “ | .50 |
| “ “ Dried, Puriss., T..... | “ | 1.25 |
| “ “ Cryst., Com..... | “ | .06 |
| “ Caustic, White, by Lime, Fused..... | “ | .75 |
| “ “ Alcohol, Dep., C. P., T..... | “ | 1.50 |
| “ “ by Sodium..... | Per lb., \$15.00, Per oz., | 1.25 |
| “ Chlorate, Cryst..... | “ | .25 |
| “ Chloride, Sol., U. S. P..... | Per bottle, | .20 |
| “ “ Dried, C. P..... | Per lb., | 1.00 |
| “ Citrate, Pure..... | “ | 1.50 |
| “ Fluoride..... | Per oz., | 1.25 |
| “ Iodide, Pure, Cryst..... | “ | .75 |
| “ Hyposulphite, C. P., T..... | Per lb., | 1.00 |

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|--|------------------------|-------|
| Soda, Hyposulphite, Am., Opt..... | Per lb., \$ | .12 |
| “ Hypermanganate, C. P..... | Per oz., | .10 |
| “ Hydrosulphite..... | Per lb., | 1.50 |
| “ Hypophosphite..... | Per oz., | .40 |
| “ Iodate..... | “ | .65 |
| “ Lactate, Sol., Conc..... | “ | 1.00 |
| “ Phosphate, Cryst., C. P..... | Per lb., | 1.00 |
| “ Pyrophosphate..... | “ | 1.50 |
| “ Nitrate, Cryst, C. P..... | “ | .40 |
| “ “ “ Refined..... | “ | .25 |
| “ Pyrophosphate..... | Per oz., | .20 |
| “ Sulphite..... | Per lb., | .50 |
| “ Santonate..... | Per oz., | 2.00 |
| “ Sulphocarbolate..... | “ | .40 |
| “ Silicate, Sol., 3 lb. bottles..... | Each, | .90 |
| “ Sulphate, Com'l..... | Per lb., | .06 |
| “ “ Pure..... | “ | .40 |
| “ Tungstate..... | Per oz., | .25 |
| Sodium, Mett..... | “ | 1.00 |
| “ Bromide..... | “ | .50 |
| “ Nitroprusside..... | Per dr., | .50 |
| “ Sulphide, Fused..... | Per lb., | .50 |
| “ “ Cryst..... | “ | 1.25 |
| “ “ C. P..... | “ | 1.50 |
| Solanine | Per gr., | .20 |
| Spermacett, Pure..... | Per lb., | .60 |
| Spirits, Ammonia, U. S. P..... | “ | .20 |
| Strontium, Mett..... | Per specimen, | 1.00 |
| Strontia, Carbonate, Precc..... | Per oz., | .10 |
| “ Caustic..... | “ | .50 |
| “ Chloride, C. P., T..... | Per lb., \$1.00, | “ .10 |
| “ Nitrate, Dried..... | Per lb., | .50 |
| “ “ Cryst..... | “ | .40 |
| “ Sulphate. See Minerals. | | |
| “ “ C. P..... | Per lb., | 1.00 |
| Strontianite. | | |
| Strychnia, Cryst., Pure..... | Per $\frac{1}{8}$ oz., | .75 |
| “ Acetate..... | “ | .75 |
| “ Chloride..... | “ | .75 |

| | | |
|----------------------------|-------------|-----|
| Sulphur , Flos..... | Per lb., \$ | .15 |
| “ Roll | “ | .10 |
| “ Chloride | Per oz., | .25 |
| “ Iodide..... | “ | .75 |
| “ Precc., Pure..... | Per lb., | .50 |

T.

| | | |
|---------------------------------------|----------------------------|------|
| Tellurium , Mett..... | Per specimen, | 1.00 |
| Thebaine , Pure..... | Per gr., | .50 |
| Theine , Pure, Alkaloid..... | Per dr., | 3.00 |
| Thallium | Per specimen, | .50 |
| “ Chloride..... | Per gr., | .10 |
| Thymol | Per oz., | 2.50 |
| Test Paper , Litmus, Blue..... | Per sheet, .05, Per quire, | .80 |
| “ “ Red..... | “ .05, “ | .80 |
| “ “ Neutral..... | “ .05, “ | .08 |
| “ Brazil Wood..... | “ .05, “ | .08 |
| “ Georgina..... | “ .06, “ | 1.00 |
| “ Guaicum..... | “ .06, “ | 1.25 |
| “ Turmeric..... | “ .05, “ | .80 |
| “ Sulphate, Manganese... .. | “ .05, “ | .80 |
| “ Schonbein's Ozone..... | Per pack, | .10 |
| “ Hydrosulphuric Acid.. | Per sheet, .05, Per quire, | .75 |
| Tin , Mett., in bars..... | Per lb., | .50 |
| “ “ Pure, in sticks..... | “ | .75 |
| “ Foil, Tissue..... | “ | .75 |
| “ Mett., Granulated..... | “ | 1.00 |
| “ Chloride, Pure, proto..... | “ | 1.00 |
| “ “ “ Liquid, non Aqueous..... | Per oz., | .50 |
| “ “ Crystals, Opt., T..... | Per lb., | 1.50 |
| “ “ “ Com'l | “ | .50 |
| “ Oxide, Pure, T..... | “ | 2.00 |
| “ Bisulphide..... | Per oz., | .65 |
| “ Sulphide, Proto..... | “ | .15 |
| Tungsten , Mett..... | Per specimen, | .50 |
| “ Oxide..... | Per oz., | 1.25 |
| Turmeric , Pow'd..... | “ | .10 |
| Toluol . | | |

U.

| | | |
|------------------------------------|----------|--------|
| Uranium, Acetate, Pure, C. P. | Per oz. | \$1.50 |
| “ Chloride “ | “ | 1.25 |
| “ Nitrate..... | “ | .25 |
| “ Sulphate..... | Per dr., | 1.25 |
| “ Oxide..... | Per oz., | 1.25 |
| Urea, Cryst., Pure..... | “ | 2.50 |
| “ Nitrate | “ | 3.00 |

V.

| | | |
|-----------------|---|-----|
| Vermillion..... | “ | .15 |
|-----------------|---|-----|

Z.

| | | |
|--------------------------------|---------------------------|------|
| Zinc, Mett..... | | |
| “ “ Puriss, Gran'l, T..... | Per lb., | .50 |
| “ Acetate, Cryst., C. P..... | Per lb., \$1.50, Per oz., | .15 |
| “ Gran'l, Com'l..... | Per lb., | .25 |
| “ “ C. P., Arsenic, Free..... | “ | .75 |
| “ “ Bromide..... | Per oz., | 1.00 |
| “ Reduced, C. P., Puriss..... | Per lb., | 1.25 |
| “ Chloride, Dry, Opt..... | Per oz., | .15 |
| “ Carbonate, Pure, Precc..... | Per lb., .75, Per oz., | .10 |
| “ Cyanide..... | “ | .40 |
| “ Ferrocyanide..... | “ | .40 |
| “ Hypophosphite..... | “ | 1.50 |
| “ Iodide..... | | |
| “ Lactate..... | “ | .75 |
| “ Nitrate, Pure..... | “ | .40 |
| “ Oxide, Precc..... | Per lb., | .75 |
| “ Phosphate | “ | .75 |
| “ Phosphide..... | Per oz., | 2.00 |
| “ Sulphate, Com'l..... | Per lb., | .10 |
| “ “ Puriss, T..... | “ | .50 |
| “ Valerianate..... | Per oz., | 1.50 |
| Zirconium, Oxide, Pure..... | Per dr., | .50 |
| Zircons, Native. See Minerals. | | |

MINERALOGICAL

AND

GEOLOGICAL DEPARTMENTS.

DURING the past year, I have organized and incorporated into this establishment a Mineralogical and Geological department. My aim and desire is to furnish to those requiring them, *characteristic*, and, at the same time, *Good Cabinet Specimens*, for lecture and other purposes, at *moderate prices*; also, the usual sets and series for Students' use, Blow-pipe purposes, etc. Each specimen, without regard to size or price, will be distinctly labeled with full name and locality. Dana will be followed in all instances.

MINERALS.

3473.—A Complete Set of Minerals, with pasteboard trays for placing them in, each specimen being perfectly characteristic and illustrating all the ordinary crystalized forms in which they occur. In all, 200 specimens; size about $2\frac{1}{2}$ x $2\frac{1}{2}$ inches. This series will be found to be very suitable for academies, seminaries, the smaller colleges, etc. \$50.00

3474.—A Collection similar to the above, but more complete, containing 300 specimens, $2\frac{1}{2}$ x $2\frac{1}{2}$ inches, neatly and securely packed in wooden boxes; each mineral being numbered, with catalogue or same. This collection is put up and selected by a practical and experienced mineralogist, and will be found quite complete.

Packed, \$75.00

COLLECTION OF THE PRINCIPAL ORES OF THE METALS.

| | |
|--|--------------------------------------|
| <i>Aluminum</i> —Cryolite, Alunite, Kaolin. | <i>Lead</i> —Galena. |
| <i>Arsenic</i> —Arsenical Iron. | <i>Manganese</i> —Pyrolusite. |
| <i>Bismuth</i> —Carbonate Bismuth, Native Mett. | <i>Mercury</i> —Cinnabar. |
| <i>Chromium</i> —Chromate of Iron | <i>Molybdenum</i> —Molybdanite. |
| <i>Cobalt</i> —Zaffre. | <i>Nickel</i> —Nicoliferous Pyrites. |
| <i>Columbium</i> —Columbite. | <i>Osmium</i> —Iridosmine. |
| <i>Copper</i> —Sulphide, Malachite, Native. | <i>Platinum</i> —Native Grains. |
| <i>Glucinum</i> —Beryl. | <i>Silver</i> —Horn Silver. |
| <i>Iron</i> —Magnetic Oxide Hæmatite. | <i>Tin</i> —Stream Tin, Sulph. Tin. |
| <i>Lithium</i> —Spodumene and Le- pidolite. | <i>Titanium</i> —Sphene, Rutile. |
| | <i>Tungsten</i> —Tungstate Iron. |
| | <i>Yttria</i> —Yttrotantalite. |
| | <i>Zirconium</i> —Zircons. |
| | <i>Zinc</i> —Calamine, Blende. |

Price of this collection, \$15.00 to 25.00

3475.—Set of 100 Minerals, of the most commonly occurring forms, neatly packed in pasteboard trays, etc. \$15.00

3476.—Collection of Chemical substances, for beginners in Blow-piping, put up in tightly corked and correctly marked Homeopathic vials, of two drachms capacity, all C. P. Recommended by Kobel. About 50 in all, \$7.00; about 25, \$3.50

This includes a specimen of all the ordinary metals in a pure state for experimental reduction with Blow-pipe.

3477.—Blow-pipe Reagent Cases, for prospectors, mineralogists, travelers, etc.; consisting of Berzelius's Blow-pipe, with Platinum tip, Platina wire and foil, pair Pincettes, and ten of the most useful dry Blow-pipe Beagents, as follows: Borax, Boracic Acid, Oxide, Copper, Carbonate Soda, Microcosmic Salt, Fluoride Calcium, Sulphate Lime, Silicic Acid, and pure Tin. All complete, in an elegant polished mahogany case. \$7.00

3478.—The same, with the addition of one Agate Mortar, one Mineral Hammer, one Anvil, three pieces of Charcoal, six glass Tubes right size for making Blow-pipe Flasks, three glass Stirrers,—heavy glass Spirit Lamp, and four glass stoppered bottles filled with Hydrochloric, Nitric, Sulphuric Acids, and Cobalt solution. \$12.50

3479.—Ditto, ditto, ditto, with Plattner's Blow-pipe Lamp instead of Spirit Lamp. \$3.00 extra.

3480.—A Collection of minerals of most excellent size, and of a character suitable for placing on the shelves of the College Cabinet, at the uniform price of 50 cents per specimen, averaging about 3x3 inches in size. These minerals were collected by a well known mineralogist of this city, and each specimen is a perfect example of its kind. They are not completely classified, and, therefore, I will sell them singly at an extremely low figure. Some of these, for example, Kyanite, Tourmaline, Zinc Ores, etc., are really deserving of very much higher prices. The greater part of this collection is from American localities.

| | | |
|------------------------------------|------------------------------|------------------------------|
| Agate, | Chalcedony, | Felspar, |
| Allanite, | Chalcopyrites, | with Fluorite, |
| Analcine, | Epidote, | Flint, |
| Apatite, | Chlorite, | Franklinite, |
| Asbestos, | Calcified Wood, | Flos. Ferri, |
| Augite, | Cinnabar, | Float Stone |
| Azurite, | Clay, Concretions, | Galenite, |
| Asphaltum, | Clintonite, | Garnets, Massive, |
| Arragonite, | Coccolite, | “ Rhomboidal, |
| Augite, Pyroxene and Scapolite, | Columbite, | “ Precious, |
| Amygdaloid, | Copper, Native, | Gibbsite, |
| Alunite, | Copper, Native, with | Graphite, Massive, |
| Actinolite, | Epidote, | “ Cryst., |
| Anhydrite, | Cryolite, | Gypsum, Massive, |
| Anthropolite, | “ with Spathic Iron, | “ Cryst., |
| Barite, | Copper, Native, with | Halite, |
| Bismuth, Mett. | Epidote and Ortho- clase, | Heavy Spar, “ “ with Iron |
| Beryl, | Chondrodite in Cal- cite, | Pyrites, etc., |
| Blende, | | Hæmatite, |
| Brucite, | Chlorophane, | Heulandite, |
| Calamine, | Chalcocite, | Hornblende, Massive, |
| Calcite, Ferruginous, | Dolomite, | “ Cryst., |
| “ Cryst., | Dioptase, | Hornstone, |
| “ Massive, | Diallage, | Hypersthene, |
| “ Granular, | Datolite, | Hyacinth, |
| Cassiterite, | Emery, | Idocrase, |
| Celestine, | Epidote, | Ilmenite, |
| Cerite, | Ekelbergite, | Iron Specular, |

| | | |
|-------------------|--------------------|----------------------|
| Iron, Magnetic, | Porphyry, | Sulphur, |
| “ Pyrites, | Pearl. Spar, | “ with Celestine, |
| Jasper, | Pectolite, | Strontianite, |
| Jaspersy Trap, | Petalite, | Sphene, |
| Jeffersonite, | Plumbago, | Spinels, pink and |
| Kaolinite, | Prase, | Chondrodite, |
| Kyanite, | Prehnite, | Pargasite, etc., |
| Labradorite, | Pyrites, Iron, | Spinels, Black, |
| Lepidolite, | “ Copper, | Spathic, Iron, |
| Lignite, | “ Magnetic, | Steatite, |
| Limonite, | Pyrolusite, | Syenite, |
| Magnetite Cryst., | Pyroxene, | Sunstone, |
| “ Massive, | Pyrrhotite, | Staurotide, |
| Malachite, | Quartz, Crystal, | Tabular Spar, |
| Marmolite, | “ Rose, | Talc, |
| Margarodite, | “ Smoky, | Titaniferous, Iron, |
| Mica, with green | “ Geodes, | Topaz, |
| Tourmaline. | Realgar, | Tourmaline, Massive, |
| Mispickel. | Rock Crystal, | “ Cryst., |
| Molybdenite, | Scapolite, | “ Green, |
| Moscovite, | Stibnite, | Tremolite, |
| Natron, | Selenite, | Wad, |
| Obsidian, | Seyberite, | Willemite, |
| Olivine, | Schefeldite, | Witherite, |
| Opal, Common, | Smoky Quartz, | Wolframite, |
| “ Wood, | Sepentine, | Wood, Petrified, |
| “ Fine, | Silicified Wood, | “ Opal, |
| Orthoclase, | Sillicious Sinter, | Zinc, Blende, |
| Orpiment, | Stilbite, | Zincite, |
| Pargasite, | Spodumene, | Zircons. |

3481.—A Set of Minerals, for illustrating the various shades assumed by minerals when generally in crystalline state:

| | | | |
|--------------------|--------|----------------------|---------|
| 1. Carrara Marble, | White. | 9. Diopase, | Green. |
| 2. Calcites, | “ | 10. Actinolite, | “ |
| 3. Quartz, | Gray. | 11. Sulphur, Native, | Yellow. |
| 4. Talc, | “ | 12. Common Opal, | “ |
| 5. Obsidian, | Black. | 13. Jasper, | Red. |
| 6. Pyroxene | “ | 14. Lepidolite, | “ |
| 7. Azurite, | Blue. | 15. Agatized Wood | Brown. |
| 8. Fluor Spar, | “ | 16. Mountain “ | “ |

Complete, in case, \$10.00

3482.—A Collection of substances well suited to illustrate the principal Blow-pipe Reactions, neatly put up in well corked vials or specimen tubes of uniform size. Very complete. \$25.00

| | | |
|----------------------|-----------------------|---------------------|
| Carb, Soda, | Alloy, Lead and Zinc, | Molybdic Acid, |
| Borax, | “ Tin and Copper, | Oxide, Silver, |
| Micro, Salt, | Alloy, Zinc and Cad- | Binoxide, Tin, |
| Bisulph., Potassa, | mium, | Tungstic Acid, |
| Boracic Acid, | Zinc, | Sesquichloride Ura- |
| Fluor Spar, | Rock, Crystal, | nium, |
| Nitrate Cobalt, | Gypsum, | Oxide, Zinc, |
| Oxalate Nickel, | Calc., Spar, | Chloride, Copper, |
| Oxide Copper, | Strontianite | Arsenite, “ |
| Chloride, Silver, | Witherite, | Petalite, |
| Lead, | Magnesite, | Hæmatite, |
| Iron, | Mica, | Rutile, |
| Tin, | Felspar, | Pyrolusite, |
| Bone-Ash, | Albite, | Lepidolite, |
| Chloride, Potassium, | Sulphides, Cu., Sb., | Apatite, |
| Bromide, “ | and Pb. | Franklinite, |
| Iodide, “ | Sulphides, Arsenic, | Pitchblende, |
| Chloride, Sodium, | and Antimony, | Chromic Iron, |
| “ “ Ammonium, | Onofrite, or Claus- | Cerussite, |
| Subchl'de, Mercury, | thalite, | Malachite, |
| Protochloride, “ | Chlorate, Potassa, | Gray Antimony, |
| Antimony, | Alumina, | Iron Pyrites, |
| Arsenic, | Sulphate, Copper, | Copper “ |
| Bismuth, | Nitrate, Lead, | Mispickel, |
| Cadmium, | Oxide, Antimony, | Smaltine, |
| Silver, | Arsenious Acid, | Cobaltine, |
| Alloy, Mercury and | Ox., Bismuth, | Realgar, |
| Tin, | Ox., Cadmium, | Cinnabar, |
| Alloy, Lead and An- | Sesquichloride Chro- | Copper Nickel, |
| timony, | mium, | Molybdenite, |
| Alloy, Lead and Bis- | Ox., Cobalt, | Berthierite, |
| muth, | Proto-oxide, Mercury, | Tetrahedrite. |

3483.—A Set for illustrating the various temperatures of fusibility of various minerals, according to Elderhorst. In case, \$1.00

- | | |
|-------------------------------|----------------|
| 1. Gray Antimony, | 4. Actinolite, |
| 2. Natrolite, | 5. Orthoclase |
| 3. Almandine, or Iron Garnet, | 6. Broncite. |

3484.—A Set of the various forms of Fossil Fuel. Price, \$3.50

- | | |
|---------------------|--------------------------|
| 1. Anthracite, | 5. Brown Coal, |
| 2. Semi-Bituminous, | 6. Lignite, |
| 3. Bituminous, | 7. Asphaltum or Bitumen, |
| 4. Petroleum, | 8. Peat. |

3485.—Series of Ten Minerals, for illustrating and testing the different degrees of hardness of minerals :

- | | |
|-----------------------------------|---------------------------------|
| 1. Talc. Foliated, | 6. Felspar, Cleavable variety, |
| 2. Rock Salt, | 7. Quartz, Transparent “ |
| 3. Calc. Spar, Transparent, | 8. Topaz, “ Crystal, |
| 4. Fluor Spar, Crystal'd variety, | 9. Sapphire, Cleavable variety. |
| 5. Apatite, Transparent Cryst. | 10. Diamond. |

Price, \$5.00. In elegant wood case, \$1.00 extra.

3486.—A Set of Minerals, for illustrating metallic color.

In case, \$3.50

- | | |
|----------------------|---------------------|
| 1. Native Copper, | 4. Native Antimony, |
| 2. Magnetic Pyrites, | 5. Galena, |
| 3. Copper Pyrites, | 6. Magnetite. |

3487.—I have a few superior specimens of that curious variety of Quartz Rock, termed Itacolumite. The shape and size of these fine examples of this mineral are just right exactly, for class exhibition, viz.: in sawed slabs, about eight and one-half inches long, two inches wide, and one and one-eighth thick. Price, each, \$2.00

3488.—A very Complete and well arranged cabinet of good sized specimens of minerals, intended for the use of Blow-pipe students and public schools, put up in sections of about fifty minerals, each section enclosed in handsome case, with movable top, with numbered catalogues. Per section, \$6.00

3489.—Ditto, ditto, consisting of full series of Rocks, of the various formations, arranged in accordance with Dana's System of Geology, with catalogue. For section of 50 specimens each, \$5.00; 10 sections, \$40.00.

3490.—A Set of Minerals, illustrating Cleavage:

- | | | |
|----------------|----------------|-------------------|
| 1. Galena, | 7. Felspar, | 13. Sulphur, |
| 2. Idocrase, | 8. Calcite, | 14. Pyromorphite, |
| 3. Tournonite, | 9. Fluor Spar, | 15. Cryolite |
| 4. Barite, | 10. Blende, | 16. Tabular Spar, |
| 5. Gypsum, | 11. Tungsten, | 17. Iceland Spar, |
| 6. Hornblende, | 12. Limonite, | 18. Rutile. |

Complete, in pasteboard case, \$10.00

3491.—**A Suit** of the various varieties of Mineral Oils, six specimens in all, put up in clear flint sample vials, for exhibiting to students the natural properties, color, etc., of petroleum, as found in the several localities of the United States. These samples range in specific gravity from 26 deg. Beaume to 50 deg. Beaume. \$5.00

3492.—**Minerals**, chiefly American, unclassified; size about $2\frac{1}{4} \times 2\frac{1}{4}$; excellent for completing amateur collections; all picked specimens; at the uniform price of, each, .25

The Calcite and Aluminous series in this selection are very well assorted, and are quite complete. Included in it are some specimens of that curious quartzose crystalization, from Bohemia, termed there, Kapp-Stein.

3493.—**I have** on sale a collection of Lava and Volcanic Tufa, which is, I think, worthy of considerable attention. It is a full series, from the various volcanoes in the Sandwich Islands, and was collected by Commodore Wilkes, in 1848, when there. It would be an exceedingly interesting addition to any college or private collection, possessing as it does also, great historical interest. Twenty specimens in all. \$10.00

3494.—**A Suit of Colorado Minerals**, including all of the ores and minerals found in this great mineral-bearing Territory. This is a quite unique and interesting little collection, suitably labeled and arranged in fine pasteboard case, with partitions and movable top 50 in all. Price, \$6.00

ELEGANT AND RARE CABINET SPECIMENS.

This part of my collection I am giving great attention, and assure my patrons that nothing under this head will be found incomplete. Included in it I may mention some extraordinarily fine and beautiful specimens of Agate, finely polished.

3495.—**Splendid Falherz Specimens**, from Germany.

3496.—**Magnificent Fluors**, from Derbyshire and Cumberland, England.

3497.—**Elba Iron Ores**, Götite, etc., of perfect beauty and size.

3498.—**That very Rare and Exquisite**, as well as wonderful, production of oceanic life, called "Venus' Flowing Basket," or "Eruptella Speciosa," found 60 fathoms deep near the Phillipine Islands,

and for a specimen of which Cummings, the great English naturalist paid, in London, £30 only six or eight years ago. \$5.00 each.

3499.—A Complete Set of Fossiliferous Rocks, of about 4 x 4 ins. in size, illustrative of the geological formations of New York. All of the New York groups and periods are fully illustrated with specimens from the principal localities in that State. Each specimen and group is characterized by its distinctive fossil or fossils. This collection of rocks has received the great approval of all the colleges who have purchased it, and is certainly deserving of notice, not only on account of its having been obtained entirely from New York State, but, also, for its completeness. It is believed to be the only collection of the kind ever put on sale in this country, and will be found to be eminently well adapted for teaching Dana's Geology in colleges, schools, etc. Carefully labeled with name of group, fossil, etc. 55 specimens in all. \$25.00

3500.—There are left at my disposal two Cabinet Collections of Minerals, belonging to gentlemen of the highest standing in the world of science, but who, for private reasons, wish to dispose of them.

Selected with rare taste and perfect mineralogical knowledge, through a long series of years, each specimen of these collections will be found to be unique examples of their class, and every class most fully illustrated. They have been gathered together from the most celebrated localities of the world, and contain specimens valued at \$250 to \$300 each.

This is a rare opportunity for colleges. Price, \$3,000 to 6,000

3501.—A Case of German Minerals, beautifully arranged, in an elegantly polished wood case, with drawers, containing 200 minerals, carefully wrapped for transportation, and completely classified and labeled; size of specimen averages about $1\frac{1}{2}$ x 2 inches

Price, with case included, \$25.00

This case would make a very useful and handsome holiday present.

3502.—The same, as above, in all respects, except containing 150 minerals instead of 200. Price, \$20.00

3503.—The same, as above, in all respects, except containing 100 minerals instead of 150. Price, \$15.00

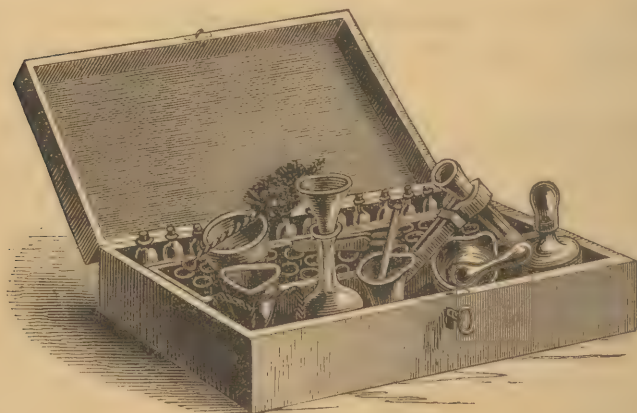
For the remainder of this department reference may be had to a separate Catalogue of Ward's Plaster Casts.

APPARATUS IN SETS,

AND

FOR SPECIAL PURPOSES.

The marginal figures in small type refer to numbers in regular catalogue.



3504

3504.—Set of Apparatus and Chemicals, for fifty initiatory experiments for boys and girls, with directions for using. These are packed in a neat wooden box, with compartments and hinged lids, and consists of the following articles. Price \$10.00

APPARATUS.

- | | |
|---|--|
| <p>1 Glass Flask, 1 oz., 1 Small Sand Crucible, 1 Shallow Sand Bath, 2 in., 1 Small Porcelain Crucible, 1 Glass Mortar and Pestle, 2 in. 2 " Stirring Rods, 1 " Spirit Lamp, 1 Small Tripod, 1 Test Glass, with lip, 4 Test Tubes, 2 Test Tube Holders,</p> | <p>3 Test Papers, 1 each color, 50 Small Filters, cut, 1 Jeweller's Blow-pipe, 1 Corrugated Funnel, 2 in., 1 Porcelain Evaporating Dish, 3 in., 1 Piece Tin Foil, 1 " Rubber Tube, 1 Pair Iron Pincettes, 3 inches Copper Wire, 3 " Iron " 2 ft. Magnesium Ribbon.</p> |
|---|--|

CHEMICALS.

| | | |
|---------------------|----------------------|----------------------|
| Acid, Boracic, | Galls, Tinct., | Manganese, Oxide, |
| " Benzoic, | Gum Arabic, | Mercury, Nitrate, |
| " Tartaric, | Iron Filings, | Pharaoh's Serpents, |
| Alum, | " Sulphide, | Phosphuretted Oil, |
| Ammonia, Carbonate, | " Sulphate, | Potash, Prussiate, |
| " Chloride, | Isinglass, | Potassa, Bichromate, |
| " Oxalate, | Lead, Acetate, | " Carbonate, |
| Antimony, Metallic, | " Oxide, | " Caustic, |
| " Sulphide, | Lime, Carbonate, | " Chlorate, |
| Baryta, Nitrate, | " Chloride, | " Nitrate, |
| Borax, | " Phosphate, | Potassium, Iodide, |
| Camphor, | Litharge, | Silver, Nitrate, |
| Charcoal, | Litmus, | Soda, Carbonate, |
| Cobalt, Chloride, | " Paper, Red, Blue, | " Phosphide, |
| Copper, Nitrate, | " Tincture, | " Sulphate, |
| " Sulphate, | Logwood, | Strontia, Nitrate, |
| Fire Clay, | Lycopodium, | Turmeric Paper, |
| Fluor Spar, | Magnesia, Carbonate, | Zinc, Granulated, |
| Galena, | Magnesium, Sulphate, | " Sulphate. |

3505.—Set of Apparatus and Chemicals, according to the following list, adapted for use in ordinary schools. Price, \$10.00

APPARATUS.

| | | |
|----------------------------|---------------------------|-------------------------------|
| 1 Alcohol Lamp, | 1 Test Tube Holder, | 1 Pack. Cut Filters, |
| 1 Retort Stand, 2 Rings, | 1 Pneumatic Trough, | $\frac{1}{4}$ lb. Glass Tube, |
| 3 Pint Flasks, | 1 Small Porcelain Mortar, | 3 ft. India Rubber Tube, |
| 3 Quart " | 2 Small Evap'ing Dishes, | 1 Glass Funnel, 3 in. |
| 6 Test Tubes, ass'd sizes, | | |

CHEMICALS.

| | | |
|--------------------------|-------------------------------|----------------------------------|
| 1 oz. Acid, Arsenious, | 2 oz. Fluor Spar, | $\frac{1}{3}$ oz. Potassium, |
| 1 " " Muriotic, | $\frac{1}{4}$ " Iodine, | 1 " " Cyanide, |
| 1 " " Nitric, | 4 " Iron, Sulphate, | $\frac{1}{2}$ " " Iodide, |
| 1 " " Oxalic, | 4 " Lead, Acetate, | $\frac{1}{2}$ " Silver, Nitrate, |
| 1 " " Sulphuric, | 4 " Lime, Chloride, | 2 " Soda, Sulphate, |
| 4 " Alum, | 1 lb. Manganese, Oxide, | $\frac{1}{2}$ " Sodium, |
| 4 " Ammonia, | 1 " Mercury, | 2 " Strontia, |
| 4 " " Carbonate, | $\frac{1}{2}$ oz. " Chloride, | 4 " Sulphur, |
| 4 " Ammonium, Chl'de, | $\frac{1}{2}$ " Nut Galls, | 2 " Wax, |
| 4 " Antimony, | 2 " Potash, Prussiate- | 6 ft. Iron Wire, |
| 4 " " Tartrate, | Yellow, | 3 " Magnesium Wire, |
| 1 " Baryta, | 1 " Ditto, ditto, Red, | 1 Piece Copper, |
| $\frac{1}{2}$ " Bismuth, | 2 " Potassa, | 1 " Zinc, |
| 4 " Borax, | 2 " " Bichromate, | 2 Sheets Litmus Paper; |
| 1 " Cobalt, Chloride, | 4 " " Chlorate, | 2 " Turmeric " |
| 4 " Copper, Sulphate, | 2 " " Nitrate, | 1 Stick Phosphorus. |

3506.—Set of Apparatus and Chemicals, the same as the foregoing, with the following additions. Price, \$15.00

APPARATUS.

| | | |
|--------------------------|-------------------------|-----------------|
| 1 Deflagrating Spoon, | 1 India Rubber Gas-bag, | 2 Stop-cocks, |
| 1 Evolution Flask, with | 1 gal., | 1 Tripod, |
| Funnel and Tubes, | 1 Jeweller's Blow-pipe, | 1 Wash Bottle.. |
| 6 ft. India Rubber Tube, | | |

3507.—Set of Apparatus and Chemicals, following, carefully packed in a dovetailed box, with sliding lid; and adequate to

the performance of the experiments in "Steele's Fourteen Weeks in Chemistry." Price, \$20.00

APPARATUS.

| | |
|--|--|
| 1 Alcohol Lamp, 4 oz., | 1 Mortar and Pestle, |
| 1 Deflagrating Spoon, | 1 Ring Platinum Sponge, |
| 2 Evaporating Dishes, | 1 Stop-cock and Connector, for Gas- |
| 1 Evolving Flask, with Funnel and Delivery Tube, | bag, |
| 1 Florence Flask, with Delivery Tube, | 6 Test Tubes, assorted sizes, |
| 1 Funnel, 3 in., | 1 Tripod, |
| 1 Jeweller's Blow-pipe, | 2 Tubes, for Hydrogen Tones, |
| 1 Small Lead Tray, | $\frac{1}{4}$ lb. French Glass Tube, |
| | 1 ft. India R'r Tube, for connections. |

CHEMICALS.

| | | |
|-------------------------------------|-------------------------------------|----------------------------------|
| $\frac{1}{2}$ oz. Acid, Arsenious, | 2 oz. Fluor Spar, | $\frac{1}{2}$ oz. Potash, Yellow |
| $\frac{1}{2}$ " Oxalic, | $\frac{1}{8}$ " Gun Cotton, for | Prussiate, |
| 4 " Alum, | Collodion, | $\frac{1}{2}$ " " Red Prussiate, |
| 4 " Ammonia, | $\frac{1}{8}$ " Iodine, | 1 " Potassa, Bicarbonate, |
| 1 " Ammonium, Chloride, | 2 " Iron, Sulphate, | 4 " " Chlorate, |
| $\frac{1}{2}$ " Antimony, Metallic, | 2 " " Sulphide, | 1 " " Nitrate, |
| $\frac{1}{4}$ " Barium, Chloride, | 4 " Lead, Acetate, | $\frac{1}{8}$ " Potassium, |
| 4 " Bleaching Powder, | 1 " Litharge, | $\frac{1}{4}$ " " Iodide, |
| 2 " Bone Black, | 16 " Manganese, Oxide, | $\frac{1}{3}$ " Silver, Nitrate, |
| $\frac{1}{8}$ " Calcium, Phosph't, | $\frac{1}{4}$ " Mercury, Chloride, | Sol, |
| Pieces, | $\frac{1}{4}$ " Nut Galls, Ground, | 1 " Sodium, |
| $\frac{1}{8}$ " Carbon, Bisulphide, | $\frac{1}{4}$ " Phosphorus, | 4 " Sulphur, |
| $\frac{1}{8}$ " Cobalt, Chloride, | $\frac{1}{8}$ " Platinum, Chloride, | 2 ft. Magnesium Ribbn, |
| Solution, | Sol., | 1 Specimen Metal Alu- |
| 2 " Copper, Sulphate, | 2 " Potash, Caustic, | minium, |
| 4 " Ether, Sulphuric, | Sticks, | 6 Sheets Filter Paper. |

3508.—Set of Apparatus and Chemicals, to illustrate Wilson's Course in Chemistry, packed in the same manner as the foregoing. Price, \$85.00

APPARATUS.

| | |
|--|---------------------------------------|
| 1 Pneumatic Trough, | 1 Woulff's Bottle, 1 qt., |
| 1 Alcohol Lamp, | 1 Nest Beakers, |
| 1 Davy's Safety Lamp, | 1 " Evaporating Dishes, |
| 2 Bunsen Burners, | 4 doz. Test Tubes, assorted, |
| 1 Compound Blow-pipe, plain, | $\frac{1}{2}$ " Thistle " |
| 1 Mouth " " | $\frac{1}{6}$ " Safety " |
| 1 Liebig's Condenser, | 1 Jar, for Iron Wire Experiments, |
| 1 Glass Oxygen Flask, | 1 Retort Stand, |
| 3 " Retorts, each 1 pt., | 2 Rubber Bags, 8 to 15 gals., |
| 6 " Tall Jars, | 1 " Gas-bag, 6 gals., |
| 2 " Receivers, each 2 qts., | 1 Piece Brass Wire Gauze, 6 ins. sq., |
| 12 " Flasks, asso'd sizes, 4 to 16 ozs , | 1 " Platinum Foil, |
| 4 " Funnels, assorted, | 1 yd. " Wire, |
| 2 lb. Glass Tube, | 4 yds. $\frac{3}{8}$ ins Rubber Tube, |
| 1 " " Rods, | 3 Deflagrating Spoons, |
| 1 Graduate, 4 ozs., | 3 Packs Filter Paper. |
| 2 Pouring Glasses, | |

CHEMICALS.

| | | |
|------------------|---------------------|-------------------|
| Acid, Arsenious, | Ammonia, | Bismuth, |
| " Muriac, | " Carbonate, | Borax, |
| " Nitric, | Ammonium, Chloride, | Cobalt, Chloride, |
| " Oxalic, | Antimony, | Copper, |
| " Sulphuric, | " Tartrate | Copper, Sulphate, |
| Alum, | Baryta, Nitrate, | Fluor Spar, |

CHEMICALS.—*Continued.*

| | | |
|-------------------|----------------------|--------------------|
| Iodine, | Nut Galls, | Potassium, Iodide, |
| Iron, | Phosphorus, | Silver, Nitrate, |
| “ Sulphate, | Potash, | Soda, Sulphate, |
| Lead, Acetate, | Potassa, Bichromate, | Sodium, |
| Lime, Chloride, | “ Chlorate, | Strontia, Nitrate, |
| Litmus Paper, | “ Nitrate, | Sulphur, |
| Magnesium, | Potassium, | Turmeric Paper, |
| Manganese, Oxide, | “ Cyanide, | Wax, |
| Mercury, | “ Ferricyanide, | Zinc. |
| “ Chloride, | “ Ferrocyanide, | |

3509.—Set of Apparatus, to be used in illustrating Barker's Text Book of Inorganic Chemistry, packed in the same manner as the last. Price, \$100.00

| | |
|--|--|
| 1942. $\frac{1}{2}$ doz. Glass Cylinders, 12 in., <i>Fig. 10, p. 103,</i> | 3016. 1 Tubulated Retort and Receiver, pint, |
| 1516. $\frac{1}{2}$ “ Saltmouths, assorted, | “ 1 “ “ “ $\frac{1}{2}$ “ |
| 2276. “ Flasks, $\frac{1}{2}$ pint, | 2054. 1 Metal or Glass Cistern, |
| 2322. “ Funnels, assorted, | 1 Porcelain Cistern, <i>Fig. 15, p.</i> |
| 1540. “ Woullf's Bottles, $\frac{1}{2}$ pint, | 117, |
| 1538. “ Woullf's Bottles, 2 necks, | 1 Adjustable Clamp, <i>Fig. 15, p.</i> |
| 1446. “ Bell Glasses, 1 pt., 2 qts., 1 $\frac{1}{2}$ gals., | 117, |
| 1453. $\frac{1}{2}$ “ Stopped Bell Jars, quart, | 1971, '72, '74. 1 Phosphorus Tripod Ap- paratus, <i>Fig. 17, p. 119.</i> |
| 3262. “ Conical Test Glasses, | 1478. 1 Compound Blow-pipe, |
| 3269. 1 “ Test Tubes, 5 in., | 3108. 1 Wire Gauze Cage, <i>Fig. 1, p. 91.</i> |
| 3269. 1 “ “ “ 6 in., | 1960. 1 Safety Lamp, |
| 3364. $\frac{1}{4}$ “ U Tubes, | 3186. 1 Gas Furnace, <i>Fig. 7, p. 98,</i> |
| 3265. “ Bulb “ | 1602. 2 Bunsen Burners, |
| 2331. $\frac{1}{4}$ “ Funnel Tubes, | 3234. 2 Retort Stands, |
| 2335. “ Safety “ <i>Fig. 11, p. 104,</i> | 3066. 4 Iron Sand Baths, |
| 1469. “ Combustion Spoons, | 1969. 6 Combustion Spoons, with cov'rs, |
| 2907. “ Pipettes, | 3226. 1 Test Tube Rack, |
| 2402. 1 Hydrogen Generator, | 1405. 1 Hydrogen Balloon. |
| 2395. 1 Sulphuretted “ “ | 2382, 2383. 1 Two-Gallon Gas-bag, with Stop-cock. |
| 2203. 1 Eudiometer, straight tube, | 2221. 1 Nest Evaporating Dishes, |
| 2204. 1 “ Ure's, | 1422. 1 “ Beakers, from 1 qt. down, |
| 2189. 1 Diffusion Apparatus, <i>Fig. 3, p. 92,</i> | 1899. 1 “ Hessian Crucibles, |
| 1714. 1 Calcium Chloride Tube, <i>Fig. 6,</i> <i>p. 95,</i> | 1885. $\frac{1}{4}$ doz. Porcelain Crucibles, with covers, |
| 2862. 1 Siemen's Tube for Ozone, 1 Apparatus for Decomposition of Water, | 3378. 1 lb. Glass Tube, assorted, |
| 1452. 1 Copper Bell Glass, with Stop- cock, | 3387. 8 ft. Rubber “ “ |
| 2055. 1 Drying Bottle, <i>Fig. 7, p. 98,</i> | 2938. 3 ft. Platinum Blow-pipe Wire, $\frac{1}{2}$ oz. Platinized Asbestos. See Chemicals. |

3510.—Set of Apparatus, arranged for the purpose of illustrating a short course of Popular Lectures. Price, \$200.00

| | |
|--|---|
| 2827. 1 Porcelain Mortar, 3 $\frac{1}{2}$ in., | 3080. 1 pr. Trimming Scissors, |
| “ 1 “ “ 5 “ | 3321. 1 “ Small Tongs, with bent ends, |
| 2822. 1 Iron, “ 6 “ | 1750. 1 “ Tube Tongs, wood, |
| 2598. 1 Glass Spirit Lamp, | 3319. 1 “ Charcoal Tongs, |
| 2614. 1 doz. Wicks for ditto, | 3322. 1 “ Steel Crucible ditto, |
| 2035. 1 Porcelain Dome for ditto, | 2303. 1 “ Platinum Pointed Forceps, |
| 2590. 1 Brass Argand Spirit ditto, | 2276. $\frac{1}{4}$ doz. Glass Flasks, 4 oz., |
| 2614. 1 doz. Wicks for ditto, | “ $\frac{1}{2}$ “ “ “ 8 “ |
| 2586. 1 Blow-pipe Spirit ditto, | “ $\frac{1}{3}$ “ “ “ 16 “ |

APPARATUS.—*Continued.*

| | |
|---------------------------------------|---|
| 2024. 1 Still and Worm, 2 gals., | 3256. 3 Tapers, mounted on Wires, |
| 240. 2 Sets of Von Babo's Apparatus | 1864. $\frac{1}{2}$ doz. Glass Covers for Jars, |
| for evolving Sulphuretted | 3237. 1 Triangular File, |
| Hydrogen, | 3236. 1 Semicircular " |
| 2382. 2 Five-gallon Gas-bags, fitted, | " 1 Rat's Tail " 4 in., |
| 2417. 3 Assorted Gas Tubes, | " 1 " " 6 " |
| 1441. 1 Small Beehive Shelf | 2578. 2 Sets Chemical Labels. |
| 3341. 1 Lead Tray, | |

N. B.—When gas is employed in the place of alcohol, gas-burners, with rubber connections, may be substituted for the spirit lamps at a small increase of cost.

A set of chemicals, adequate to the performance of experiments with the foregoing apparatus, can be supplied for about \$25.00.



3511

3511.—Set of Apparatus, for conducting operations in Volumetric Analysis. Price, \$60.00

No notice is taken, in this list, of instruments which are not volumetric; such as Balances, Weights, Boiling Flasks, Gas-burners, etc. Full information respecting such instruments may be found in other sections of this work.

| | |
|--|--|
| 1590. 1 Mohr's Burette, 100 c.c., in halves, | 1591. 1 Ditto, ditto, 50 c.c., in tenths, with Stopcock, |
| " 2 Ditto, ditto, 50 c.c., in fifths, | 1587. 1 Bink's Burette, 100 c.c., |
| " 1 Ditto, ditto, 25 c.c., in tenths, | 3207. 1 Wood Support for 4 Burettes, |

APPARATUS.—Continued.

| | |
|---|--|
| 3204. 1 Brass Support for 2 Burettes, | 1946. 1 Graduated Cylinder, 1,000 c.c., |
| 1597. 5 Erdman's Floats to fit ditto, | 2693. 1 Mixing Jar, stopper'd, 1,000 c.c., |
| 2913. 1 Graduated Pipette, 100 c.c., in ones, | 2692. 1 " Bottle, 1,000 c.c., |
| " 1 Ditto, ditto, 50 c.c., in fifths, | 3278. 1 Porcelain Slab, 5 in., |
| " 1 Ditto, ditto, 10 c.c., in fifths, | 1333. 1 Alkalimeter, for Chameleon Test, |
| " 1 Ditto, ditto, 5 c.c., in tenths, | 2924. 2 Porous Plates, for Drying Pre- cipitates, |
| 2907. 2 Bulbed Pipettes, | 1420. 1 Set of six Beakers, |
| 2899. 4 Spring Clamps, with Tips, | 3262. ½ doz. Test Glasses, ½ oz., |
| 1946. 1 Graduated Cylinder, with Lip, 50 c.c., | 3164. 1 " Stirring Rods, |
| " 1 Ditto, ditto, with ditto, 100 c.c., | 2318. ½ " Glass Funnels, 1 to 4 in., |
| " 1 Ditto, ditto, ditto, 250 c.c., | 3378. ½ lb. Glass Tubing. |
| " 1 Ditto, ditto, ditto, 500 c.c., | 2367. 1 doz. Test Papers, each color, |
| | 2265. ½ quire Swedish paper. |

3512.—Set of Apparatus and Chemicals, for the performance of experiments in Agricultural Chemistry. Price, \$65.00

APPARATUS.

| | |
|---|--|
| 1399. 1 Small Balance for Grain w'ts, | 2970. 1 Conical Jar, tall, 4 oz., |
| 2827. 1 Porcelain Mortar, No. 8, | 3262. 3 " Test Glasses, assorted, small, |
| 3410. 1 Copper Water Bath, | 3226. 3269. 1 Test Tube Stand, filled, |
| 3066. 1 Iron Sand Bath, 5 in., | 3274. 2 Test Tube Holders, wood, |
| 2598. 1 Glass Spirit Lamp, 4 oz., | 2322. 1 Glass Funnel, 2 inches, |
| 2615. 3 ft. of Wick for the same, | " 1 " " 2½ " |
| 2442. 1 Graduated Measure, 1 oz., | " 1 " " 3 " |
| 2279. 3 French Flasks, 4 oz., | 1897. 1 Sand Crucible, No. 0. |
| " 3 " " 8 oz., | " 1 " " No. 1. |
| 2276. 3 Bohemian " 8 oz., | " 1 " " No. 2. |
| " 3 " " 16 oz., | 2255. 1 Pack Filters, 5 in., |
| 2389. 1 Evolution " with Delivery Tube, pint, | " 1 " " 6 in., |
| " 1 Glass ditto, with ditto, | " 1 " " 7 in., |
| 3040. 1 Oxygen Retort, quart, | 3217. 1 Filter Stand, |
| 2402. 1 Hydrogen Generator, | 1483. 1 Black's Blow-pipe, |
| 1943. 1 Cylinder, with Lip and Glass Foot, 2x12 in., | 2925. 1 Small Platinum Capsule, ¼ oz., |
| 1446. 1 Knobbed Bell Jar, pint, | 3125. 1 " Steel Spatula, |
| " 1 " " " quart, | 3321. 1 pair Japanned Tongs, |
| 1453. 1 Stoppered " " " | 3155. 1 Horn Spoon, |
| " 1 " " " gallon, | 3350. 1 Porcelain Triangle, |
| 1687. 1 Porcelain Casserole, | 3164. ½ doz. Stirring Rods. |
| 2002. 1 " Digester, | 3407. 1 pair Watch Glasses, |
| 3033. 1 Stoppered Retort, 4 oz., | 1755. 1 Watch Glass Holder, |
| 3027. 1 Plain Retort, 4 oz., | 2868. ½ doz. Sheets Litmus Paper, each color, |
| 1 Brass Retort Stand, | 1516. ¼ doz. Salt-Mouths, 1 oz., |
| 1971. 1 Dehydrating Globe, 1 gallon, | 1517. ¼ " Tinctures, 1 oz., |
| 1966. 1 " Spoon and Cover, | 1504. 1½ doz. Packing Bottles, corked, 2 oz., |
| 2222. 6 Semi-Porcelain Deep Evaporat- ing Dishes, | " 1 " Ditto, ditto, ditto, 4 oz., |
| 2210. 2 Berlin ditto, about 8 in., | 2935. 1 Specimen Platinum Foil, |
| " 2 ditto ditto, " 10 " | 2938. 1 " " Wire. |

CHEMICALS.

| | | |
|---------------------|------------------------------|---------------------------|
| 1 oz. Acid, Acetic, | 3 oz. Ammonium Chloride, | 2 oz. Copper, Bl'k Oxide, |
| 1½ " " Tartaric, | 2 " Barium Chloride, | 2 " Iron, Proto-Sulphate, |
| 4 " Alum, Crystals, | 2 " Ammonia, Carbonate, | 4 " " Sulphide, |
| 1 " " Nitrate, | 4 " Calcium Chloride, Fused, | ½ " Magnesia, Calc'd, |
| 2 " " Oxalate, | 4 " " Hydrate, | 4 " " Sulphate, |

CHEMICALS.—Continued.

| | | |
|----------------------------|------------------------|-----------------------|
| 8 oz. Manganese, Peroxide, | 1 oz. Potassa, Carb'c, | 1 oz. Soda, Biboate, |
| 1 " Mercury, Red Oxide, | 4 " " Chlorate, | 1½ " " Carbonate, |
| ½ " Phosphorus, | 1 " " Hydrate, | 1 " " Phosphate, |
| | 4 " " Nitrate, | 6 " Zinc, Granulated. |
| | 3 " Silica, in powder, | |

3513.—List of Apparatus, for use in the Volumetric Analysis of Urine. Price, \$20.00

| | |
|--|--|
| 1590. 1 Mohr's Burette, | 2322. 1 Glass Funnel 2½ in., |
| 3206. 1 Burette Support, | 2255. 1 Pack Filters for each size, |
| 2899. 1 Clamp and Tip, with Rubber Attachment. | 3216. 1 Funnel Holder, |
| 2913. 1 Graduated Pipette, 25 c.c. in fifths, | 3262. ½ doz. Test Glasses, ½ oz., |
| " 1 ditto ditto, 25 c.c. in tenths, | " ½ " " " 1 oz., |
| 1946. 1 ditto Cylinder, 500 c.c. lipped, | 3269. ½ " " Test Tubes, with wide mouths for Hydrometer, |
| 2909. 3 Fixed Pipettes, ass'd, 5 to 20, | 3226. 1 Support for ditto, |
| 2906. 3 Straight " for decanting, | 1420. 1 Set of six Beakers, |
| 2276. 1 Bohemian Flask, wide mouth, ½ pint, | 1438. 1 Beaker Flask, |
| " 1 " " 8 oz., | 3278. 1 Porcelain Slab, 6 in., |
| " 1 " " 16 " | 2922. ¼ doz. Porcelain Plates for Indicating Test, |
| " 1 " " 25 " | 2634. 1 doz. Sheets Litmus paper, each color, |
| 2636. 1 Litre " " | 1519. 1 Bottle for Litmus Tincture, |
| " 1 quart'r Litre " " | 3406. 1 Wash Bottle, pint, |
| 2322. 1 Glass Funnel, 1½ in., | 3164. ½ doz. Glass Stirrers, 6 inch. |
| " 1 " " 2 " | |

3514.—Set of Apparatus and Chemically Pure Tests, for use in the Qualitative Analysis of Urinary Deposits. Price, \$37.50

APPARATUS.

| | |
|--|--|
| 1400. 1 Balance, with Weights, | 3331. 1 pr. Tongs for holding the same |
| 2598. 1 Spirit Lamp, | 1675. 3 Porcelain Capsules, assorted, |
| 2615. 1 yard Lamp Wick, | 3269. 8 Test Tubes, 6 in., |
| 1644. 1 Lamp Cylinder, | 3269. 2 " " 4x1 in., |
| 3233. 1 Iron Stand, with 2 Rings, | 3267. 3 doz. Assorted Test Papers, |
| 3066. 1 Sand Bath, | 2322. 1 Glass Funnel, 2 in., |
| 3410. 1 Water " " | 2255. 1 Pack Filters, to fit the same, |
| 3353. 1 Tripod, | 3164. 3 Glass Stirrers, |
| 3461. 1 sq. ft. Wire Gauze, | 3104. 4 " Slides, |
| 2518, '19. 1 Urinometer, with Solution Tube, | 3407. 3 Watch Glasses, |
| 1885. 1 Porcelain Crucible, No 1, | 2440. 1 Graduated Minim Glass, |
| 2925. 1 Platinum Capsule, ¼ oz., | 2906. 2 Straight Pipettes, 6 in. |

CHEMICALS.

| | | |
|-----------------------|--------------------------|----------------------------|
| 8 oz. Acid, Acetic, | 2 oz. Ammonia, Oxalate, | 4 oz. Copper, Sulphate, |
| 8 " " Hydrochloric, | 8 " " Spirits, | ½ " Silver, Nitrate, |
| 8 " " Nitric, | 2 " Baryta, Nitrate, | 1 " Zinc, Chloride, fus'd. |
| 2 " Ammonia Carbon'te | 4 " Potash, Caustic Sol. | |

3515.—Apparatus, for Qualitative Chemical Analysis.

Price, \$50.00

| | |
|-----------------------------------|------------------------------------|
| 2829. 1 Porcelain Mortar, 2½ in., | 1644. 1 Lamp Cylinder Furnace, |
| 2599. 1 Spirit Lamp, 3 oz., | 3351. ½ doz. Wire Triangles, |
| 2615. 1 yd. Wick for ditto, | 3066. 1 Five-inch Sand Bath, |
| 3080. 1 pr. Trimming Scissors, | 1885. 1 Porcelain Crucible, 1 in., |
| 3350. 2 Porcelain Triangles, | 2424. 1 sq. ft. Iron Wire Gauze, |

APPARATUS.—*Continued.*

| | |
|---|---|
| 3234. 1 Iron Retort Stand, with 3 Iron Rings, | 1755. 1 Watch Glass Holder, |
| 2424. 1 Coarse Wire Netting for supporting Tubes when in the Sand Bath, | 1690. 1 Small Royal Berlin Casserole, |
| 2003. 1 Porcelain Digester, | 3462. $\frac{1}{2}$ doz. $\frac{1}{2}$ -oz. Test Glasses, |
| 3323. 1 pr. Steel Crucible Tongs, | 2906. $\frac{1}{2}$ " Straight Pipettes, 6 in., |
| 1671. 6 Small Evaporating Capsules, plain, glazed both sides, | 2907. 2 Cylinder " " |
| 2276. 1 Cooking Flask, each 2, 4, 6 oz., | " 1 Bulb " " |
| 1419. 1 Nest Beakers, 1 to 5, | 3259. 1 doz. 6-in. Test Tubes, |
| 3027. 1 4-oz. Retort, plain, | " 3 Test Tubes, 2 in high, 1 in. wide, |
| 3033. 1 " " stoppered, | 3378. 1 lb. Glass Tubing, $\frac{3}{4}$ -in. bore, |
| 3014. 1 " Tubulated Receiver, | 3274. 2 Wooden Test Tube Holders, |
| 3331. 1 Clark's Retort, | 1575. 2 Test Tube Brushes, |
| 3217. 1 Funnel Holder, | 3406. 1 Wash Bottle, pint, |
| 3164. 1 doz. Glass Stirrers, 3 in., | 3387. 1 ft. Rubber Tubing, |
| " $\frac{1}{2}$ " Ditto, ditto, each 6 and 9 in., | 2039. 1 Shuster's Alkalimeter, plain, |
| 2318. 1 Glass Funnel, each 2, 2 $\frac{1}{2}$, 3 in., | 6 Pieces of ordinary Glass, 4x6 in., |
| 2255. 1 Pack Filters, each size to fit above, | 3267. 6 Sheets Test Paper, assorted, |
| 3226. 1 Test Tube Stand, filled, | 1 Small collection of Test Metals, for Precipitating, |
| 2221. $\frac{1}{2}$ doz. Semi-Berlin Evaporating Dishes, a set, | 2233. 1 Evolution Flask and Delivery Tube, |
| 3407. 1 pr. Watch Glasses, 2 in., | 2427. 1 Plate Cobalt Glass, |
| | 1 Hollow Glass Prism, small, |
| | 3278. 1 Flat Testing Slab, |
| | 2924. 2 Porous Plates, for drying Precipitates, |

A collection of forty Reagents can be included in the above, in bottles, if required, at reasonable prices.

3516.—Apparatus for Physicians, for Medical Tests. \$125.00

| | |
|--|---|
| 2329. 1 Small Porcelain Mortar, No. 0, | 2447. 1 Blow-pipe Hammer, |
| 3125. 1 4-in. Steel Spatula, | 1356. 4 large Bulb Tubes, Arsenic, Clark's, |
| 1400. 1 Apothecaries Balance, small, | 2276. 4 Glass Flasks, 1 each, 2, 4, 6, 8 oz., |
| 3451. 1 Set Grain Weights, for ditto, | 3268. $\frac{1}{2}$ doz. Hard Bohemian Test Tubes for Reductions, |
| 2439. 1 Graduate, 1 oz., | 1434. 1 set Lipped Beakers, 1 to 5, |
| 2598. 1 4-oz Spirit Lamp, | 1420. 1 " Beakers, 0 to 5, |
| 2615. 1 yard Wick for ditto, | 3408. 2 Watch Glasses, 3 in., |
| 3352 or '53. 1 Tripod, | 2205. 1 set Bohemian Glass Evaporators, plain, |
| 3234. 1 Retort Stand, with 3 Rings, | 1755. 1 Watch Glass H'der, Hoffmann's, |
| 3066. 1 5-in. Sand Bath, | 1756. 1 " " " Mohr's, |
| 2424. 1 Coarse Wire Gauze, for supporting Tubes, | 3269. 1 doz. Test Tubes, each 3 and 5 in., |
| 3351. 6 Wire Triangles, | 3269. $\frac{1}{2}$ " " " 3 in. wide, |
| 2424. 1 sq. ft. Iron Wire Gauze, | 1749. 2 Wooden Test Tube Holders, |
| 1486. 1 Berzelius' Blow-pipe, | 3227. 1 Mahogany Test Tube Stand, small, with Drying Pins, |
| 1494. 1 Plattner's Blow-pipe Lamp, on Stand, | 3271. 1 nest of Test Tubes, in paste-board box, |
| 1704. 4 pieces Prepared Charcoal, | 2002, '4, '5. 1 doz. Porcelain Digesters, assorted, |
| 1705. 1 Charcoal Support, | 3262. $\frac{1}{2}$ doz. 1 oz. Test Glasses, |
| 2938. 1 ft. Blow-pipe Platinum Wire, | 3164. $\frac{1}{2}$ " " " Stirring Rods, ea. 3 & 6 in., |
| 2935. 1 sq. in. Platinum Foil, | 2906. $\frac{1}{2}$ " " " Plain Straight Pipettes, 5 or 6 in., |
| 2940. 1 Plat. Crucible, with cover, $\frac{1}{2}$ oz., | 2907. 1 Bulb Pipette, |
| 2925. 1 Platinum Capsule, $\frac{1}{2}$ oz., | 2969. 1 " " Bent Top, |
| 3455. 3 ft. Fine Copper Wire, | 3378. $\frac{1}{2}$ lb. Glass Tubing, |
| 2303. 1 pr. Platinum pointed Forceps, | 2318. 1 Glass Funnel, ea. 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3 in., |
| 2928. 1 Platinum Spoon, | 2255. 1 Pack of Filters for each size, |
| 2308. 1 pr. Blow-pipe Tongs, with Platinum Points, | 3217. 1 Wood Funnel Holder, |
| 2298. 1 pr. Steel Forceps, | |
| 3080. 1 pr. Scissors, | |
| 3149. 1 Brass Weighing Spoon, | |
| 1344. 1 Blow-pipe Anvii, | |

APPARATUS.—Continued.

| | |
|---|--|
| 2251. 2 Porcelain Filter Rings, 3 arms, | 1885. 1 Porcelain Crucible, with Covers, |
| 2246. 1 Filter Dryer, | each 00, 0, 1, 2, 3, |
| 3406. 8 oz. Wash Bottle, | 1350. 1 Marsh's Arsenic Apparatus, |
| 3408. 3 Glass Covers, 3 in., | complete, |
| 2924. 2 Porous Plates. | 1356. 2 doz. Assorted Arsenic Tubes, |
| 1 Small Collection of Test Metals, | 2233. 1 Evolution Flask and Delivery |
| 2634. 1 doz. sheets Litmus Paper, each | Tube, |
| Red and Blue, | 3031. 1 Clark's Retort, |
| 3278. 2 White Glazed Porcelain Slabs, | 3033. 1 4 oz. Stoppered Retort, |
| 2211. 1 set Royal Berlin, Small, Eva- | 1542. 1 8 oz. Woulff's Bottle, fitted Rub- |
| porating Dishes, | ber Corks. |
| 2210. 4 ditto ditto, No. 6, | |

The following bottles, containing Chemicals, as below :

| | |
|--|---|
| 1524. Tinctures, 8 1-oz., 14 3-oz., 3 4-oz., | 1516. Salt-Mouths, 16 $\frac{1}{2}$ -oz., 7 4-oz. |
| 6 8-oz., | |

CHEMICALS.

| | | |
|-------------------------|---------------------------------------|--|
| 4 oz. Acid Acetic, | 1 Piece Copper Foil, 3x3 | 1 oz. Potass. Sulphoc'y'de, |
| 2 " " Tartaric, | in, pure, | 1 " " Carbonate, |
| 2 " " Oxalic, | 4 oz. Ferrous Sulphide, | 1 " " Cyanide, |
| 6 " Barium Chloride, | 8 " " Sulphate, | 1 " Silver Amm'd, Sol., |
| 4 " " Nitrate, | 1 " Indigo, | $\frac{1}{2}$ " Ditto Nitrate, cryst., |
| 2 " Cobalt Sol. " | 4 " Charcoal, Powdered, | 1 " Zinc, Chloride, |
| 4 " Ammonia C'bonate, | 4 " Ferric Chloride, | $\frac{1}{2}$ lb. " Pure, in Sticks, |
| 4 " " Chloride, | 4 " Flux Black; | 4 oz. Potass. Ferricy'de, |
| 4 " " Oxalate, | 8 " Lead Acetate, | 2 " " Ferricy'de, |
| 4 " " Sulphide, | 2 " Mercury Chloride, | 2 " " Hydrate, |
| 6 " Calcium, Chloride, | $\frac{1}{2}$ lb. Manganese, Oxide, | 1 " " Iodide, |
| 1 lb. " Sulphate, | $\frac{1}{2}$ oz. Platinum, Chloride, | 4 " " Nitrate, |
| 1 oz. Copper Ammoniated | Sol, | 8 " Sodium, Carbonate, |
| Sulphate, | $\frac{1}{2}$ lb. Potass. Bichromate, | 2 " " Phosphate, |
| 1 lb. Copper Sulphate, | 2 oz. " Ferricyanide, | 3 " Tin, Chloride. |

3517.—Apparatus, for Miners and Engineers. Price, \$105.00

| | |
|---|--|
| 1 Small Cheap Balance and Set | 2938. 2 ft. Platinum Blow-pipe Wire, |
| of Grain Weights. | 2935. 1 sq. in. " Foil, |
| 2439. 1 2-oz. Graduate, | 2925. 2 Small Platinum Capsules, |
| 1998. 1 Steel Crushing Mortar, | 2305. 1 pr. " " Pointed Tongs, |
| 2518. 1 2-in. Agate " | 3455. 1 yd. Copper Wire, |
| 3827. 1 3-in. Porcelain Mixing Mortar, | 1701. 1 doz. Blocks Prep'd Charcoal, |
| 3125. 1 Steel Spatula, each 4 and 6 in., | 1 Bottle Charcoal Powder, 16 oz., |
| 2237. 1 Triangular File, in handle, | 1 " Rice Flour, 4 oz., |
| 2236. 1 Round " " | 2933. 1 Mould for Pastiles, |
| " 1 Half Round File, | 3351. 1 Small Wire Triangle, |
| 2599. 1 Glass Spirit Lamp, 3 oz., | 3278. 2 5-in. Porcelain Plates, |
| 2615. 1 yd. Wick for same, | 3269. 1 doz. Narrow Test Tubes, 3 in., |
| 3080. 1 pr. Trimming Scissors, | 3371. 1 " Small Specimen Tubes, |
| 3321. 1 " Japanned Tongs, | corked, |
| 3234. 1 Iron Retort Stand, with 3 Rings, | 2621. 1 Magnifying Lens, in horn case, |
| 1885. 1 Porcelain Crucible, each 0 No. 1. | 3378. 1 lb. Glass Tubing $\frac{1}{8}$ in. bore, |
| 2002, 2005. 8 Assorted Porcelain Di- | 3333. 1 pr. Cupel Tongs, |
| gesters, | 1356. 1 doz. Assorted Tubes, Liebig's |
| 1488. 1 Berzelius's Brass Blow-pipe, | form, |
| with extra Jet, | 1432. 1 Set 3-lipped Beakers, |
| 2940. 1 Platinum Crucible, $\frac{1}{2}$ oz., | 1421. 1 " of 6 " 0 to 6, plain, |
| 2604. 1 Plattner's Blow-pipe, Lamp and | 2276. $\frac{1}{2}$ doz. Flasks, assorted, 2 to 6 oz., |
| Stand, | 3407. 2 Watch Glasses, 2 in., |
| 1344, 2446. 1 Anvil and Hammer, | 1755. 1 Hoffman's Glass Clamp, |
| 3226. 1 pr. Blow-pipe Tongs, with Pla- | 2575. 1 Blow-pipe Knife, |
| tinum ends, | 1690. 1 Small R. Berlin Casserole, No. 1, |
| 3116. 1 Mixing Spoon, with Spatula, | 1687. 1 Semi " " " No. 1, |

APPARATUS.—*Continued.*

| | |
|---|--|
| 2233. 1 Evolution Flask, with Delivery Tube, | 2906. 2 Plain Pipettes, 1 Hare's Foot, |
| 3031. 1 Clark's Retort, | 3226, 3271. 1 Test Tube Rack, fitted, |
| 3378. $\frac{1}{2}$ lb. assorted Glass Tubing, | 3274. 1 Wooden Test Tube Holder, |
| 2322. 1 Glass Funnel, ea. 2, 2 $\frac{1}{2}$ & 3 in., | 1575. 2 Test Tube Brushes, |
| 1864. 2 Glass Covers, each 3 and 4 in., | 3267. 6 sheets Assorted Test Papers, 1 Small Collection of Test Metals, |
| 2321. 1 Nest of German Funnels, | 2210. 3 Smallest size Royal Berlin Evaporating Dishes, 00, 0, 1, |
| 3216. 1 Small Funnel Holder, | 3164. $\frac{1}{2}$ doz. 6-in. Glass Stirrers, |
| 2251. 2 Porcelain Filter Rings, | 3008. 1 Box Blow-pipe Reagents. |
| 2255. 1 Pack. Cut Filters, 4, 5, 6 in., 1 Wash Bottle, Berzelius's Form, | |

The Chemical Tests, to accompany the above Apparatus, will be packed to order, according to the number of bottles required.

3518.—Apparatus, suitable to be dealt out to Students in Colleges; each set nicely packed in dovetailed boxes, with sliding covers. Price, \$15.00

| | |
|--|--|
| 2498. 1 Glass Spirit Lamp, 4 oz., | 2278. 1 16 oz. Flask, Round Bottom, |
| 2615. $\frac{1}{2}$ yd. Wick, in paper box, | 3406. 1 Pint Wash Bottle, |
| 3233. 1 Small Retort Stand, | 3104. 4 Glass Slides, |
| 3351. 1 Iron Wire Triangle, | 3378. $\frac{1}{2}$ lb. Glass Tubing, $\frac{3}{8}$ in bore, |
| 3066. 1 Sand Bath, | 2279. 1 Flask for Sulphur'd Hydrogen, |
| 3414. 1 Porcelain Water Bath, 6 in., | 3408. 3 Watch Glasses, 2 in., |
| 1484. 1 Jeweller's Blow-pipe, | 3164. 2 Stirring Rods, 6 " |
| 2935. 1 Small piece Blow-pipe Foil, | 3226, 3371. 1 Test Tube Rack, filled, |
| 2938. 1 Piece 6-in. " Wire, | 3267. 6 Sheets, each kind, Test Papers, |
| 1885. 1 Porcelain Crucible, each 1 and 1 $\frac{1}{2}$ in., | 3387. 1 ft. Rubber Tubing, $\frac{1}{4}$ in., |
| 3321. 1 pr. Japanned Crucible Tonges, | 2318. 1 2-in. Bohemian Funnel, |
| 3125. 1 4-in. Spatula, | 2317. 1 American " 3 in., |
| 2827. 1 Porcelain Mortar, 2 $\frac{1}{2}$ in., | 2255. 1 Pack Cut Filters, 3 " |
| 1418. 1 Small Set Baker Glasses, 0 to 4, | " 1 " " 5 " |
| 2221. 1 Nest Porcelain Evaporators, | 2237. 1 Triangular File, |
| 2276. 2 4-oz. Flasks, | 2236. 1 Round " |

3519.—Apparatus. for performing most of the experiments described in Stockhardt's Chemistry. Price, \$15.00

| | |
|--|---|
| 3033. 1 4-oz. Retort, | 2322. 1 Funnel, 1 $\frac{1}{2}$ and 2 in., |
| 2276. 1 Flask, each 2, 4, 6 and 8 oz., | 2255. 1 Pack Filters, each 3 and 4 in., |
| 1416. 1 Set of 4 small Beakers, | 3104. 6 Glass Slides, |
| 2281. 1 Flask, round bottom, each 4 and 6 oz., | 2634. 1 doz. Blue Litmus Paper, 1 Piece Pure Zinc, |
| 2498. 1 Small Spirit Lamp, | 3164. 2 Glass Stirrers, each 3 and 6 in., |
| 2615. 1 yd. Wick, | 2221. 1 Semi-Porcelain Evaporator, shallow, 3 $\frac{1}{2}$ in., |
| 1483. 1 Black's Blow-pipe, | 3029. 1 Glass Oxygen Retort, 2 bulbs, 6 oz., |
| 1502. 1 doz. ass'd 4-oz. Bottles, stop- pered and corked, | 2233. 1 Flask, with Deliv'y Tube, 16 oz, 1441. 1 Beehive Shelf, |
| 2938, 2935. 1 Small piece of Platinum Wire and Foil, | 2236. 1 Round File, with handle, |
| 2829. 1 Porcelain Mortar, 00, | 3378. $\frac{1}{2}$ lb. Assorted Glass Tubing, |
| 1644. 1 Cylinder, | 3353. 1 Brass Tripod, |
| 3422. 1 ft. Wire Gauze, | 3147. 1 Iron Spoon, |
| 3274. 1 Test Tube Holder, | 3233. 1 Retort Stand, with 2 Rings, |
| 3226, 3371. 1 Test Tube Rack, filled, | 3066. 1 Small Sand Bath, 4 in., |
| 2331. 1 Funnel Tube, | 1715. 1 Chloride of Calcium Tube, |
| 1885. 1 Porcelain Crucible, | 1356. 3 Arsenic Tubes, ass'd. |
| 3262. 1 4-oz. Test Glass, | |

The above apparatus can be enlarged at the pleasure of the purchaser. A set of chemical substances, accompanying the above, will also be furnished, if desired, at reasonable rates.

3520.—Apparatus, for Analysis of Urine, to accompany Manual, by Dr. Austin Flint, Jr. Price, \$40.00

APPARATUS.

- | | |
|---|---|
| <p><i>a</i> 1 Urinometer, 6 oz., <i>b</i> 1 Thermometer, 1 oz., graduated in drachms, <i>c</i> Graduated Glasses, 1 drachm, <i>d</i> 4 Conical Glasses, with Porcelain Covers, <i>e</i> Porcelain Evaporating Dishes and Watch Glasses, <i>f</i> Test Tube Stands, with Test Tubes, <i>g</i> 3 Funnels and Filtering Paper, <i>h</i> 3 Flasks and Wire Gauze, <i>i</i> Bunsen's Burner, Rubber Tubing, etc., or Alcohol Lamp,</p> | <p><i>k</i> Burette, graduated in grains, <i>l</i> 200-Grain Measure, <i>m</i> Tube, graduated in cubic inches, with vessel in which it can be inverted, <i>n</i> Rings and Clamp for Graduated Tube, <i>o</i> Stirring Rods and Drop Tubes, <i>p</i> Swabs and Brushes, for cleaning, <i>q</i> Platinum Spoon for Calculi, <i>r</i> Blow-pipe, <i>s</i> Colored Papers, gummed for recording the color of specimens.</p> |
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CHEMICALS.—*Case of Reagents containing :*

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|---|---|
| <p>1 Nitric Acid, 2 Hydrochloric Acid, 3 Acetic " 4 Nitros-Nitric " 5 Nitrate of Silver, in solution, 9.58 grains in an ounce, 6 Sulphate of Copper, in ditto, 94.73 grains in an ounce, 7 Neutral Tartrate of Potash solut'n, 378.91 grains in an ounce,</p> | <p>8 Sol. of Soda, Specific Gravity, 1.12, 9 Liquor, Potassa, 10 " Ammonia, 11 Ether, 12 Mercury, 13 Solution of Hypochlorite Soda, 14 Ditto, Chloride of Sodium, sat'rat'd, 15 Test Papers, 16 German Yeast.</p> |
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EXTRA APPARATUS AND CHEMICALS.

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|---|---|
| <p><i>a</i> Hydrometer, of Baume's, for Liquids heavier than Water, <i>b</i> 1000-gr. 500-gr. and 100-gr. Specific Gravity Bottles, <i>c</i> Water Bath, <i>d</i> " Oven and Swedish Filters, <i>e</i> 2 Wash Bottles and 3 Precipitating Glasses, 1 Sesqui Chloride of Iron; 9.33 grs. of Iron by Hydrogen dissolved in Hydrochloric with a little Nitric Acid, evaporated to dryness and dissolved in 6 fluid ozs. of Water,</p> | <p><i>f</i> A Balance at least delicate enough to turn with $\frac{1}{10}$ of a grain, <i>g</i> Graduated Solution of Chloride of Barium, 36.6 grains, in six fluid ozs. of Water, for Quantitative Analysis for the Sulphates, <i>h</i> 3 Separate Solutions for Quantitative Analysis for Phosph'ic Acid. 2.400-grs. of Acetate of Soda, and 800-grs. of Acetate Acid, in 6 fluid ozs. of Water. 3.12-grs. of Ferrocyanide of Potassium, dissolved in 6 fluid ozs. of Water.</p> |
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3521.—Apparatus, for Assay.

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| 1369. Assay Balance, No. 1..... | \$50.00 |
| 1370. Ditto, ditto, No. 2..... | 72.00 |
| 1371. Ditto, ditto, No. 3..... | 72.00 |
| 1372. Ditto, ditto, ditto, with Apparatus for Rider..... | 78.00 |
| 3417 to 3433. Weights, various prices. | |
| 3522. Basin for Washing Gold..... | 1.50 |
| 1462. Assay Bellows..... | .75 to 1.00 |
| 1486 to 1490. Assay Blow-pipes..... | \$2.00 to 4.00 |
| 1581. Assay Brushes, for cleaning Button..... | .50 |
| 1712. Ditto, Chisels, for clipping Ingots..... | .50 |
| 1876. Ditto, Crucibles..... | Per doz. 1.00 |
| 1877. Ditto, ditto, Iron..... | " 2.50 |
| 1878. Ditto, ditto, French, Beaufay..... | .05 to .08 |
| 1879. Ditto, ditto, Covers..... | .50 to .75 |
| 1870. Ditto, Glass Covers..... | .50 to .75 |

APPARATUS.—*Continued.*

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|---|------------------------|
| 1882. Assay Crucibles, Plumbago..... | \$.20 to 1.63 |
| 1893. Ditto, ditto, Platinum..... | Per gramme. .40 to .45 |
| 1895. Ditto, ditto, Metallurgists..... | .20 |
| 1896 to 1907. Ditto, ditto, Sand..... | .05 to .35 |
| 1908. Ditto, ditto, Roasting..... | .75 |
| 1911. Ditto, ditto, Supports..... | .60 |
| 1919. Bone Ash Cupels..... | Per doz. .35 to 2.25 |
| 1920. Cupel Holders..... | 1.00 |
| 1921. Ditto, Moulds..... | 2.50 to 4.50 |
| 2007. Iron Dippers..... | .40 to .50 |
| 2008. Tin Dippers..... | .60 to .80 |
| 2016. Roasting Dishes..... | Per doz. .75 to 5.00 |
| 2217. Evaporating Dishes..... | Per set. 2.75 |
| 2219. Ditto, ditto..... | " 2.50 |
| 2236, '37. Files..... | .18 to .50 |
| 2273. Parting Flasks..... | Per doz. 1.50 |
| 2274, 2275. Assay Flasks..... | .50 |
| 2296. Forceps, for crushing the Button..... | 1.75 |
| 2358. Furnaces, Kent's..... | 21.00 |
| 2360. Ditto, Cupelling..... | 15 to 35.00 |
| 2361. Ditto, Hibb's Patent..... | 50.00 |
| 2365. Ditto, Griffin's Gas..... | 20.00 |
| 2368. Ditto, Chilton's..... | 40.00 |
| 2448. Hammers..... | 1.00 |
| 2451. Ditto..... | 1.75 |
| 2453. Ditto..... | 2.50 |
| 2838. Ingot Moulds..... | 1.50 to 2.50 |
| 2822. Iron Mortars..... | .40 to 4.75 |
| 2532. Ivory Scale, Harcourt's..... | 5.00 |
| 2621. Lenses or Glasses, Magnifying..... | 2.50 |
| 2623. Ditto, ditto, Stanhope's..... | 2.00 to 2.50 |
| 2688. Mineralogists' Slates, for trying the Streak of Minerals..... | .40 to .50 |
| 2841 to 2847. Muffles..... | .30 to 2.50 |
| 3008, 3009. Reagent Cases..... | 2.50 to 4.00 |
| 3087. Scoops, for Assay..... | 1.50 |
| 3085. Scorifier Holders..... | 1.50 |
| 2836. Ditto, Moulds..... | 5.00 to 7.00 |
| 3086. Scorifying Moulds..... | 1.09 |
| 3180. Stop-cocks of Silver, for Assay..... | 30.00 |
| 2297. Tongs, for holding hot Tubes..... | 1.00 |
| 3319 to 3320. Ditto, Coal..... | 1.00 to 1.75 |
| 3321 to 3328. Ditto, Crucible..... | .50 to 6.50 |
| 3333 to 3336. Ditto, Cupelle..... | 1.50 to 2.75 |
| 3337. Ditto, Scorifier..... | 1.25 |

Apparatus for General Use in Analysis: Spirit Lamps, Furnaces, Flasks, Beakers, Test Glasses, Baths, Filtering Apparatus, Evaporating Basins, Retorts and Receivers, Hydrometers, Stills, Gas Bottles, and other Analytical Apparatus, will be found under their respective heads in this work.

3523.—Apparatus, for Assay before the Blow-pipe.

Lingke's Freiburg complete set of Blow-pipe Apparatus, for Qualitative and Quantitative Analysis, in German silver, comprising every article used in blow-piping, with reagents of the most choice kind, put up in extra fine, close-stoppered bottles, each bottle covered with an extra rubber cap to preserve their purity, with accurate Specific Gravity Balance, enclosed in a glass and mahogany case, and each department packed in highly polished mahogany cases, and the apparatus and reagents again enclosed in an elegant mahogany case, with lock and key, and the whole apparatus and scales enveloped in leather envelope straps and handles, for hand transportation. \$275.00

3524.—Apparatus, the same as the foregoing, in Brass. \$260.00

3525.—Ditto, Lingke's, for Gold and Silver Assay. 200.00

The above are all manufactured to order, by Dr. Lingke, and have his stamp on, and are well known to be the most complete apparatus of the kind to be found anywhere. The Balances are very celebrated for their delicateness and accuracy.

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|--|----------------------|
| 1370, 1372. Balances..... | \$72.00 to \$78.00 |
| 1482 to 1497. Blow-pipes, various..... | 50 to 12.00 |
| 2932. Ditto, Tips, Brass and Platinum..... | .10 to 1.50 |
| 2568. Ditto, Jets..... | .25 |
| 1344 to 1346. Ditto, Anvils..... | .75 to 1.00 |
| 1581. Button Brush..... | .50 |
| 1694. Carbon Cells, for fusions..... | .50 |
| 1672. Blow-pipe Capsules..... | Per doz. 1.25 |
| 1673. Ditto, ditto..... | Each. .20 |
| 1674. Ditto, ditto..... | Per doz. 1.20 |
| 1675. Ditto, ditto..... | " 1.75 |
| 1701. Charcoal, 4 pieces for..... | .25 |
| 1702. Charcoal Borers, Spatula Handles..... | .30 to .40 |
| 1703. Ditto, ditto, 4 points, Cocoa Handles..... | .50 to .75 |
| 1704. Ditto, ditto, 8 points, "..... | 1.00 to 1.25 |
| 1705. Charcoal Holders..... | 2.75 |
| 1706, 1707. Ditto, Saws..... | .50 to .75 |
| 1708. Ditto, Spatulas..... | .50 |
| 1711. Ditto, Sticks..... | .50 to .60 |
| 1709, 1710. Ditto, Tonges..... | .75 to 1.25 |
| 1712. Chisels for clipping Ingots..... | .50 |
| 3526. Clay Cylinder..... | .25 |
| 1800. Compasses..... | 2.50 |
| 1806. Ditto..... | 15.00 |
| 1870. Covers of Glass for covering Choice Specimens..... | .50 to .75 |
| 3527. Crucibles, Iron, with Cover..... | |
| 1919. Cupels, Bone Ash..... | Per doz. .35 to 3.25 |
| Bone Ash, for Cupels, according to quality. See Chemicals.. | .30 to .70 |
| 1920. Cupel Holders..... | 1.00 |
| 2941. Cutting Pliers..... | 1.25 |
| 2282. Blow-pipe Flasks..... | Per doz. .60 |
| 2291 to 2312. Ditto, Forceps..... | .25 to 2.50 |
| 3528. Funnel Holders, Plattner's..... | .25 |
| 1346. Hammers, French, with two ends, one flat for crushing, and one round end for pulverizing, with round anvil, having one side flat for crushing, and the other side with concave center for pulverizing, and provided with a brass circular cap to retain the powder in the mortar, finely finished, with German silver tip to the handle..... | 10.00 |
| 2446. Ditto, Plattner's..... | .75 |
| 2447. Ditto, Freiburg..... | 1.00 |
| 2448, '49. Hammers..... | 1.00 to 1.25 |
| 2451 to 2453. Ditto, heavier..... | 1.75 to 2.50 |
| 3529. Hare's Foot..... | .10 |
| 2457. Holders for Platinum, Spoons and Wire..... | .60 |
| 2575. Knives, Plattner's..... | .75 |
| 2576. Ditto, for Glass Tubing..... | .50 |
| 2604. Lamp, Plattner's..... | 3.00 |
| 2596 to 2601. Spirit Lamps..... | .50 to 1.00 |
| 2659. Lead Measures..... | .50 |
| 2621 to 2628. Lenses..... | 1.00 to 3.50 |
| 2646. Magnets, Bar..... | 1.00 |
| 2688. Mineralogist's Slates, for trying the Streak of Minerals..... | .40 to .50 |
| 2690. Mixers, or Mixing Capsules, brass..... | .50 to 1.00 |
| 2691. Ditto, ditto, ditto, horn..... | .25 |

APPARATUS.—*Continued.*

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|---|--------------------|
| 2818. Mortars, Agate..... | \$1.90 to 30.00 |
| 1998, '99. Ditto, Diamond, of steel..... | 5.00 to 7 50 |
| 2822. Ditto, Iron..... | .40 to 4.75 |
| 2831. Ditto, Steel, highly polished..... | 2.00 to 5.00 |
| 2832. Moulds, Boxwood, for Cartridge Cases..... | .20 |
| 1909. Ditto, ditto, for Charcoal Basins..... | .75 |
| 1910. Ditto, Brass, for Clay Crucibles..... | 4.25 |
| 1921. Ditto, ditto, for making Cupels..... | 2.50 to 4.50 |
| 2836. Ditto, ditto, ditto, Scorifier..... | 5.00 to 7.00 |
| 2838. Ditto, Iron, for Gold and Silver Bars..... | 1.50 to 2.50 |
| 1922. Ditto, Steel, for Cupels, with Supports..... | 2.75 |
| 2837. Ditto, Wood, for forming Charcoal pieces, oblong..... | 1.25 |
| 3530. Ditto, ditto, ditto, ditto, blocks, square..... | |
| 2813. Mouth-Pieces of Horn..... | .25 |
| 2814. Ditto, ditto, Ivory..... | .50 |
| 1580. Pencils, Camels' Hair, for taking up fine dust from the Balance Pan, etc..... | .25 |
| Platinum Foil and Wire..... | Per grain. .02½ |
| 3008. Reagent Cases, with turned Caps, small..... | 2.50 |
| 3009. Ditto, ditto, with space for Blow-pipe, Forceps and Platinum Box..... | 4.00 |
| 3111, '12. Reagent Chests..... | 10.00 to 12.00 |
| 3046. Roasts, Plattner's..... | 2.00 |
| 2658. Scales, Harcourt's, for Measuring the Button..... | 5.00 |
| 3080. Scissors..... | .50 to 1.00 |
| 3099. Sieves, Box, Griffin's..... | 2.50 |
| 3100. Ditto, Plattner's, Brass..... | .50 |
| 3117. Spatulas, Horn..... | .10 to .40 |
| 3124. Ditto, Steel, small..... | .40 |
| 3154, '55. Spoons, Horn..... | .15 to .50 |
| 3147. Ditto, Iron, small and large..... | |
| 3113. Ditto, Ivory, Plattner's, small and large..... | |
| 2928. Ditto, Platinum..... | |
| 3267. Test Papers..... | Per sheet. .05 |
| 3117. Tin Foil..... | Per square ft. .15 |
| 3349. Triangles, Plattner's..... | .25 |
| 1357. Tubes, Bulbs, for subliming..... | Per doz. .75 |
| 3417 to 3433. Weights, various prices..... | |
| 3455. Wire, Copper..... | Per lb. 2.00 |

Files, Flasks, Funnels, and other Apparatus. See appropriate apparatus under their respective heads.

3531.—Set of Instruments, for Blow-pipe Analysis. \$45.00

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|--|--|
| 1 Brass Blow-pipe, with 2 Platinum Tips, | 1 Bar Magnet, |
| 1 Ditto, Blow-pipe Lamp, | 1 Magnifying Glass, with 2 Lenses, |
| 1 Stand for Evaporating Dish, Triangles, etc., | 1 Alcohol Lamp, with Brass Cover, |
| 1 Funnel Holder and Chimney, | 2 Ivory Spoons, |
| 1 Platinum Pointed Forceps, | 1 Charcoal Saw, |
| 1 Brass Forceps, | 1 Mattress Holder, |
| 1 Steel Forceps, for Lamp, | 1 Knife, |
| 1 Pair Cutting Nippers, | 1 Assay Button Brush, |
| 1 " Flat Forceps, | 2 Mixing Capsules, 1 brass, 1 horn, |
| 1 Platinum Wire Holder, with 6 Wires, | 1 Steel Mixing Spatula, |
| 1 Hammer, | 2 Brushes, |
| 1 Anvil, | 1 Box for Soda Papers, |
| 1 Steel Mortar, | 1 Wooden Form for Paper Cylinders, |
| 1 Agate ditto, 2¼ in. in diameter, | 1 yd. Lamp Wick, |
| 1 Charcoal Borer, club-shaped, | 1 Cupel Holder, with 2 Cupel Cups and 1 Mould, |
| 1 " " four-cornered, | 1 Charcoal Holder, with Platinum Ring and Screw, |
| 1 " " with Spatula, | 1 Test Lead Measure, |

APPARATUS.—*Continued.*

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|-------------------------------|---------------------------------------|
| 1 Box for Clay Crucibles, | 12 Bottles with Glass Stoppers, flat, |
| 1 pair Lamp Scissors, | 1 Charcoal Holder Stand, |
| 1 Wash Bottle, | 1 Coal Tray, |
| 1 Dropping Bottle, | 1 Dirt “ |
| 3 Porcelain Dishes, 3 sizes, | 1 Clay Cylinder, |
| 2 “ “ Cups, for Gold Assay, | 2 Iron Rings, |
| 2 Watch Glasses, | 1 Hare's Foot. |
| 6 Wooden Boxes, for Reagents, | |

3532.—Set of Apparatus, for Quantitative Blow-pipe Use.

\$15.00

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|---|--|
| 1 pair Flat Pincers, | 1 Charcoal Holder, with Platinum Ring and Screw, |
| 1 Assay Button Brush, | 2 Ivory Spoons, |
| 2 Mixing Capsules, 1 Brass, 1 Horn, | 2 Porcelain Cups, for Gold Assay, |
| 1 Cupel Stand, with 2 Cupel Cups and 1 Mould, | 1 Box for Clay Crucibles, |
| 1 Charcoal Borer, club-shaped, | 1 yd. Lamp Wick, |
| 1 “ “ four-cornered, | 1 Steel Mortar, |
| 1 “ “ with Spatula, | 1 Knife, |
| 2 Brushes, 1 large, 1 small, | 1 pair Lamp Scissors, |
| 1 Box for Soda Papers, | 1 Wash Bottle, |
| 1 Wooden Form for Paper Cylinders, | 12 Glass Bottles, with Flat Stoppers. |
| 1 Test Lead Measure, | |

3533.—Apparatus, for illustrating Hinrich's Elements of Physics.

For exclusive use in the Lectures (see School Laboratory, 1871, p.66), the teacher should procure as much as possible of the larger apparatus and finer specimens of crystals, minerals, etc., mentioned in the work. No general directions can here be given; the wants and means of the school will have to be consulted in making out the order. The teacher ought, however, always to give the precedence to the apparatus to be used by the students in the Laboratory Practice, if the means of the school do not permit the purchase of this necessary apparatus and the more costly apparatus also. This simple apparatus required for the demonstration of the Fundamental Laws of Electricity (see 341 to 372), is more important to the student, and therefore to the school, than the more expensive and more powerful machines (373 to 380); that is, the simple apparatus for students' experiments must be obtained first; the fine electrical machines and batteries should thereafter be procured as soon as possible. The necessary apparatus for Student's Laboratory Practice is divided into two distinct groups, viz.: I. Apparatus placed at convenient points in the Laboratory, to be used by students in general; II. Sets of Apparatus, put up in a separate tray, of wood or pasteboard, sufficient to demonstrate any given article in the book. (See article 492 in the Elements of Physics.)

Every piece of apparatus should be labeled. (See *El. Phys.*, 495-'96.) Below, the principal fixed apparatus for general use is enumerated. A few sets for the demonstration of separate articles have been added, simply to serve as examples. A full enumeration of all the sets required would demand too much space.

I.—APPARATUS FOR GENERAL USE.

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|--|--|
| 7. Meter Rods, of wood or brass, several, labeled No. 1, No. 2, etc. | 11. Graduated Cylinders, several, viz: |
| Decimeter Rules, of card paper or brass; a great number; to be distributed with the sets (see II); also called Centimeter Scale. | 100 c.c. divided to 1.0 c.c. |
| Meter Tape, 10 meters long. | 50 “ “ “ 0.5 “ |
| 10. A Twenty-five Cubic Centimeter Flask. | 10 “ “ “ 0.1 “ |
| A 100 ditto. | Of the last a considerable number is required for the several sets II. |
| | 15-21. Balances and Weights: |
| | a Druggists' Counter Scales—set of Weights 0.1 gr. to 1000 grms., mainly for work in Chapter II. |

APPARATUS FOR HINRICH'S PHYSICS.—*Continued.*

- b* Druggists' Prescription Scales—set of Weights 0.1 to 50 grms.
c Ditto, with Weights 0.01 to 50 grms.; with Equipoise for one scale-pan, for use as Hydrostatic Balance. See 123.
 (Larger Laboratories require several of each of these three balances.)
35. Protractors, brass, horn; a considerable number, both for sets in § vi, Chap. III, and § iv Chap. I.
36. Goniometers; a considerable number, for sets in § vi, Chap. III.
37. A Good Pendulum Clock.
38. A Simple Second Pendulum; metallic bob and double iron wire. (School Lab., 1871, plate 3, fig. 6, upper pendulum.)
131. Barometer Scale, English inches, to 0.01 inch. Convert to mm., by Table, p. 167.
136. Aspirator.
148. Mortars, of Porcelain and Agate.
259. Astronomical Telescopes, Achromatic.
a Common, power 5 to 10.
*b** Larger, mounted (best equatorially), power 16 to 64; objective 6 to 10 cm. diameter.
277. Opera Glass.
281. Microscopes.
a Common, imported, cost about \$20.00.
*b** Large, bulbs, more powerful.
286. Micrometer, on glass, 1 mm., in 50 parts.
- 288*. Microscope, with Polarizing Apparatus, for observation of microscopic crystals (290).
301. Horse-shoe Magnet, strong, with Keeper.
323. Lodestone, in box, with iron filings and nails.
327. Compass.

II.—SEPARATE SETS.

Each set, as far as possible, put up in a separate tray; all pieces labeled. (See article 495).

12. Volume of One Drop of Water—1. Tube Pipette; 2. Graduated Cylinder, 10 c.c. to 0.1; 3. Bottle for Distilled Water.
13. Test Graduated Cylinder—1. Graduated Cylinder, 10 c.c. to 0.1; 2. A One-cubic Centimeter Pipette; 3. Bottle for Water.
14. Mensuration of Volume of Vessels—1. Graduated Cylinder, 50 c.c. to 0.5; 2-3. Two Test Tubes; 4. Beaker; 5. Flask; 6. Porcelain Dish; 7. Centimeter Scale.
24. Determine Weight of U. S. Coins—1. Half Dollar; 2. Quarter Dollar; 3. Dime; 4. Five Cents, Nickel; 5. One Cent, Copper.
 As 24*b*, *c*, etc., similar Lots of Foreign Coin may be put up separately.
28. Specific Gravity of Rectangular Solids—1. Tablet of Wood; 2. Prism of Wood; 3. Rectangular Block of Cork; 4. Rectangular Piece of Lead; 5. Sandstone; 6. Limestone; 7. Centimeter Scale.
29. Specific Gravity of Liquids—1. Graduated Cylinder, 10 c.c. to 0.1; Bottles contain'g: 2. Water; 3. Alcohol; 4. Gasolene.
- 30*a*. Specific Gravity of Solids Insoluble in Water—1. Graduated Cylinder; 2. Bottle with Water; Specimen Tubes with Fragments of, 3. Galenite; 4. Gypsum; 5. Iron (nails); 6. Lead (shot); 7. Sulphur; 8. Anthracite.
306. Specific Gravity of Solids Soluble in Water—1. Graduated Cylinder; 2. Bottle with Gasolene; Specimen Tubes with: 3. Crystals of Nitre; 4. Crystals of Blue Vitriol; 5. Crystals of Alum.

3534.—Set of Apparatus, Quantitative, to be dealt out to each Student, as recommended by the School of Mines, Columbia College, New York City. \$47.50

2 Bunsen's Burners,
 2 Rubber Tubes for ditto, 2 ft. each,
 2 Iron Ring Stands,
 4 Filter Stands,
 1 Test Tube Rack,
 12 Test Tubes, 4 in.,
 12 " 6 "

2 Test Tubes, 7 in.,
 1 " 8 "
 1 Nest of 6 Beakers, plain,
 3 " " " lipped,
 3 Funnels, 1½ in.,
 5 " 2½ "
 2 " 3¼ "

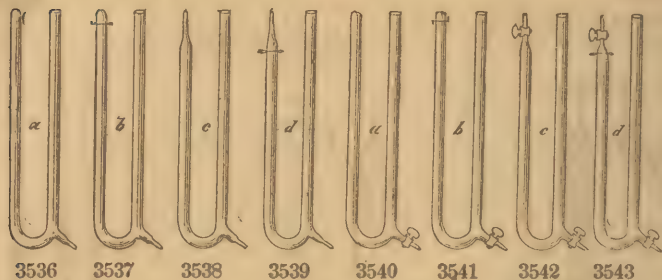
STUDENTS' QUANTITATIVE APPARATUS.—*Continued.*

| | |
|------------------------------------|-------------------------------------|
| 1 Funnel, 4 in., | 1 File, |
| 1 " 5 " | 2 Steel Forceps, |
| 1 Wash Bottle, pint, | 1 oz. Bichloride of Platinum, Solu- |
| 1 " 8 oz., | tion, |
| 1 " 4 oz., | 6 " Nitrate of Silver, |
| 3 Convex Covers, 3 in., | 2 Bottles for ditto, |
| 3 " 4 " | 2 " corked, 10 oz., |
| 3 " 5 " | 2 " " 8 " |
| 3 Ground Glass Covers, 3 in., | 2 " " 4 " |
| 3 " " " 4 " | 2 " " 1 " |
| 3 " " " 5 " | 2 Sand Baths, |
| 6 Watch Glasses, | 4 Wire Triangles, |
| 2 Chloride of Calcium Tubes, | 2 Towels, |
| 1 Flask, 1 oz., for Carbonic Acid, | 1 Scissors, |
| 1 doz. Specimen Tubes, 3 in., | 1 Test Tube Brush, |
| 2 Dessicators, | 1 Horn Spatula, 4 in., |
| 2 Glass Tubes, . | 1 Package Cut Filters, 3 in., |
| 2 Glass Rods, | 1 " " 4 " |
| 3 Porcelain Crucibles, 1½ in., | 6 Sheets Swedish Paper, |
| 2 " " 1¼ " | 1 " Glazed |
| 1 Nest of 6 Evaporating Dishes, | 1 Set Filter Patterns, |
| 2 Casseroles, 4 in., | 1 ft. Rubber Tubing, ⅜ in., |
| 1 Porcelain Mortar, 4½ in., | 2 Pieces Wire Gauze, |
| 1 Blow-pipe, | 1 Copper Water Bath, |
| 2 ft. Platinum Wire, | 1 Rat-Tail File, |
| 2 Platinum Foils, | 1 Watch Glass Clip. |

3535.—Set of Apparatus, Qualitative, to be dealt out to each Student as recommended by the School of Mines, Columbia College, New York. \$24.00

| | |
|----------------------------------|--|
| 1 Bunsen's Burner, | 1 Blow-pipe, |
| 1 Rubber Tube for ditto, 2 feet, | 1 Foot Platinum Wire, |
| 1 Iron Ring Stand, | 1 Platinum Foil, |
| 2 Filter Stands, | 1 File, |
| 2 Test Tube Racks, | 1 Steel Forceps, |
| 24 Test Tubes, 4 in., | 1 oz. Bichloride of Platinum, Solut'n, |
| 24 " 6 " | 6 " Nitrate of Silver, " |
| 2 " 7 " | 2 Bottles for ditto, |
| 1 " 8 " | 2 " corked, 1 oz., |
| 1 Nest of 6 Beakers, plain, | 2 Sand Baths, |
| 2 Funnels, 1½ in., | 2 Wire Triangles, |
| 2 " 2¼ " | 1 Towel, |
| 1 Wash Bottle, pint, | 1 Scissors, |
| 6 Watch Glasses, | 1 Test Tube Brush, |
| 1 Flask, 4 oz., | 1 Horn Spatula, 4 in., |
| 2 Glass Tubes, | 2 Packages Cut Filters, 3 in., |
| 1 Glass Rod, | 2 " " 4 " |
| 2 Porcelain Crucibles, 1½ in., | 1 Foot Rubber Tubing, ⅜ in., |
| 2 " " 1¼ " | 1 Piece Wire Gauze, |
| 1 Nest of 6 Evaporating Dishes, | 1 Deflagrating Cup, |
| 1 Porcelain Mortar, 4½ in., | 1 Blue Glass. |

HOFFMAN'S APPARATUS.



Apparatus which may be Used to Illustrate Hoffman's Modern Chemistry. Most of these Forms are constantly on hand, and all the Joints are carefully sealed and Stop-cocks ground in the most careful manner.

- 3536.** Hoffman's Glass U Tubes, 16 inches (a), with plain bent Tube sealed in below.....\$1.00
3537. Ditto, ditto, ditto, ditto, 16 inches (b), with Platinum Electrodes sealed into the top of one of the Tubes.....\$1.25
3538. Ditto, ditto, ditto, ditto, 16 inches (c), with plain bent and inlet-tubes.....\$1.00

3539. Ditto, ditto, ditto, ditto, 16 inches (d), with Platinum Electrodes sealed into the top of one of the Limbs. \$1.50

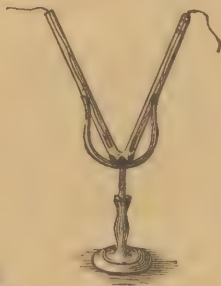
3540. Ditto, ditto, ditto, ditto, 16 inches (a), with delivery-cock at the base of one of the Tubes.....\$2.00

3541. Ditto, ditto, ditto, ditto, 16 inches (b), with delivery-cock at the base of one of the Tubes, and Platinum Electrodes sealed into one of the Limbs.....\$2.50

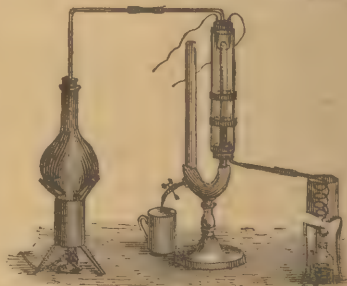
3542. Ditto, ditto, ditto, ditto, 16 inches (c), with glass outlet-cock and waste-cock at the top of one of the Limbs \$3.00



3544



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3549

3543. Ditto, ditto, ditto, ditto, 16 inches (d), with glass outlet-cock and waste-cock at the top of one of the Limbs, and Platinum Electrodes sealed into one of the Limbs.....\$4.00

3544. Hoffman's Lecture Endiometer, mounted on stand, complete.....\$15.00

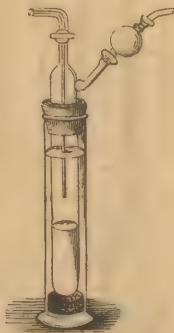
HOFFMAN'S APPARATUS.—Continued.

3545. *Hoffman's Apparatus*, for Recomposition of Water, consisting of three Eudiometers, mounted on stand, each provided with a Delivery Cock of glass, and two of them with cocks in the top.....\$15.00

3546. Ditto, ditto, for the Decomposition of Hydrochloric Acid in Hydrogen and Chlorine; of Water into Hydrogen and Oxygen, and of Ammonia into Hydrogen and



3550



3554



3556

Nitrogen, consisting of a V-shaped Tube, with Platinum Electrodes, mounted on stand.....\$6.00

3547. Ditto, ditto, ditto, ditto, unmounted..... 2.50

3548. Ditto, ditto, for the Illustration that the Gas evolved from Hydrochloric Acid by the Electric Current contains equal volumes of Chlorine and Hydrogen, unmounted.....\$3.00

3549. *Apparatus*, for Demonstration of Oxygen, Hydrogen and Water, consisting of U Tube, mounted on stand, supplied with Stop-cock Delivery Cock and Glass Worm, complete.....\$15.00

3550. Ditto, for ascertaining the exact proportions of Hydrogen and Nitrogen in Ammonia, unmounted.....\$3.00

3551. *Metallic Supports* for the above, and other similar apparatus, each.....\$4.00

3552. *Hoffman's Apparatus*, for the Demonstration of Proportion, at equal volumes of Water, Hydrochloric Acid and Ammonia, consisting of U Tube with Stop-cocks at top, Pinch-cock at bottom, with Platina Electrodes, mounted on stand, No. 913.....\$10.00

3553. Ditto, ditto, for the Determination of Chlorine Water, consisting of U Tube, with fine ground glass Stopper at the top, and having also Platinum Electrodes on arm, No. 259, mounted.....\$7.00

3554. Ditto, ditto, for the Testing of Sulphuric Acid, consisting of a long glass vessel or bottle, into the neck of which is ground stoppered with fine emery, a Glass Tube running about half way down the bottle, and bent at right angles at the top. Out of the shoulder of this bottle projects a Tube, having two fine ground glass Stop-cocks, with a bulb between them; the whole is firmly fixed by a cork into a strong cylindrical glass receptacle, having a flat bottom.....\$7.50

3555. Ditto, ditto, Four Burners, mounted on one stand, each Burner about 2 inches apart.....\$7.50

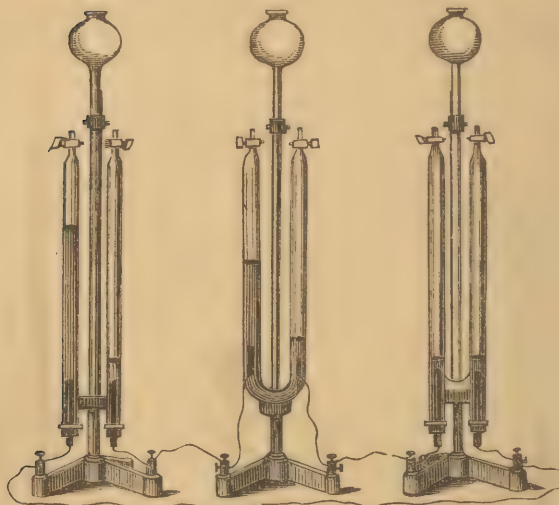
1755. Hoffman's Watch Glass Clamps, each..... .20

3556. *Hoffman's Apparatus*, for the Decomposition of Water, consisting of three Way Tubes, with two glass Stop-cocks for delivery and one large bulb in the Supply Tube, with Platinum Electrodes sealed in and communicating with the strips of Platinum Foil, unmounted.....\$6.50

3557. Ditto, ditto, ditto, mounted.....\$10.00

3558. Ditto, ditto, with Charcoal Points for the Electrolysis of Hydrochloric Acid and Ammonia, mounted.....\$15.00

HOFFMAN'S APPARATUS.—Continued.



3559

3559. Apparatus, for Volumetric Electrolysis of Carbonic Acid Gas, Water and Ammonia, through one Electric current, consisting of two Three Way Tubes with two glass Stop-cocks with Carbon Electrodes and one Three Way Water Decomposing Apparatus, each separately mounted, with special Binding Screws. All the above having large glass Bulbs. \$30.00

3560. Ditto, ditto, for the Arrangement of Combustion Experiments, consisting of a large glass Tube drawn at the upper end and bent at right angles, into which is secured a glass Stop-cock, connecting with a rubber Tube delivery into the lower or open end is fitted, by means of a rubber stopper, a tube of medium width, into which is secured a glass Stop-cock tube with a burner of Platinum Foil in the end. There is also a blowing tube, bent at right angles, fitted into the same rubber stopper. \$10.00

3561. Hoffman's Apparatus, for showing the principle of Carré's Ice Freezer, by producing ice from water by the employment of Ammonia. \$15.00

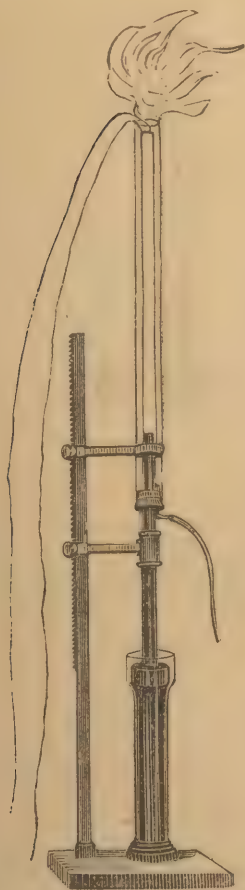
3562. Ditto ditto, for the condensation of the Elementary Gases, Hydrogen and Oxygen, in water, at boiling temperature, as well as for Eudiometric Analysis of the Fire Damp and the oil forming gases (as per Hoffman's Modern Chemistry, Fourth Edition; also per Records of the German Chemical Society, 2d Vol., p. 245), consisting of an Iron Stand with Toothed Bar, in which is secured a long glass tube, supplied with Platinum Electrodes, and fastened in a brass support, which can be easily moved up and down. \$30.00

3563. Ditto, ditto, for burning Sulphur by the Electric Current, demonstrating equal volumes of Oxygen and Carbonic Acid Gas, also Sulphurous Acid formed from it; consisting of an U shaped tube, with a large bulb near the top, which is stoppered with a two-holed cork, and provided with a Waste-cock. In each hole in the cork is a wire fastened, one of which is provided with a small spoon to receive Carbon, or Sulphur. The upper ends of the wire are supplied with Binding Screws. (See illustration, p. 236.) \$12.50

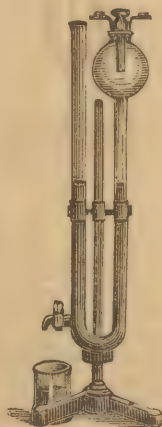
3564. Ditto, ditto, to observe the ratio of volume of Simple and Compound Gases under the influence of pressure and changes in the temperature (Per Hoffman's introduction to his work on Modern Chemistry, and Records of the German Chemical Society, 2d Vol., p. 257), consisting of a long U formed glass tube, ending in four vertical branch tubes in the shape of a fork and supplied with glass cocks. The apparatus is carefully held in place by a nicely constructed support, which sustains four glass cylinders, fastened in

HOFFMAN'S APPARATUS.—Continued.

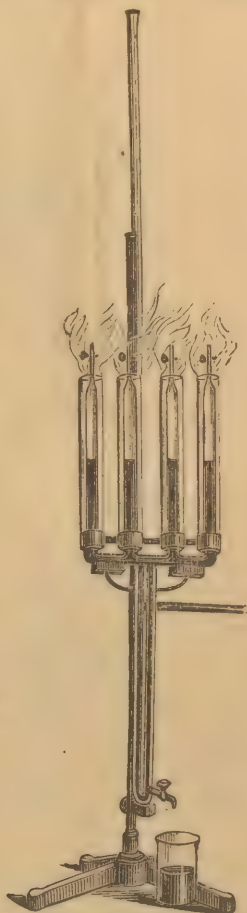
place with metal spring caps, which envelope each branch tube. These caps are so arranged that they may be connected with a Steam-boiler by means of a metal pipe.....\$50.00



3562



3563

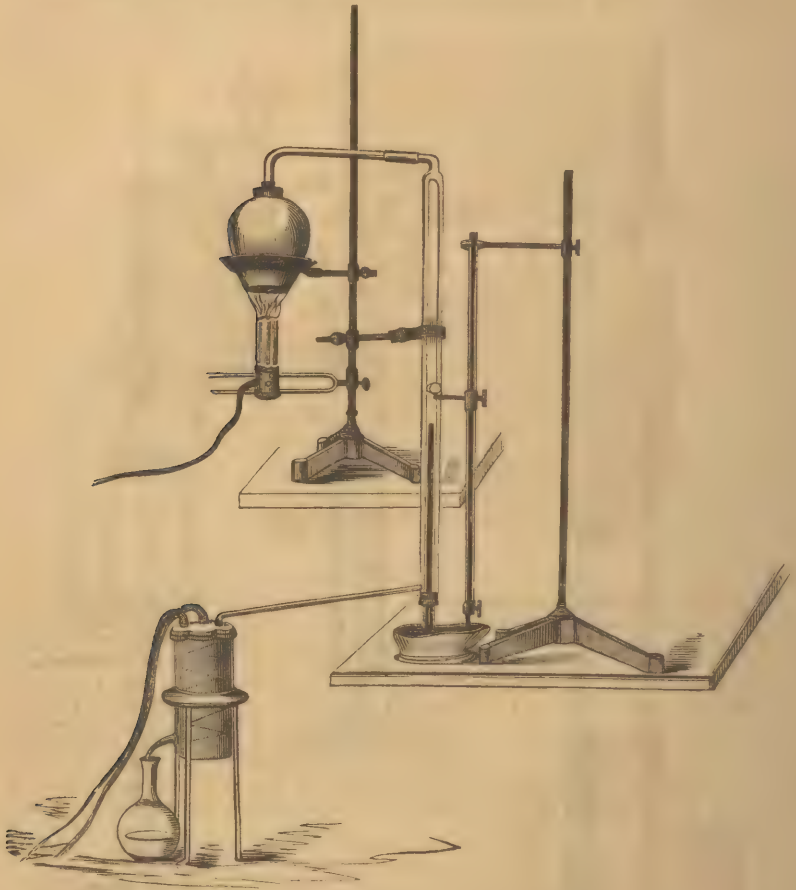


3564

3565. *Hoffman's Steam-Tight Determination Apparatus*, consisting of a Barometer Tube, 1 Meter long, graduated in $\frac{1}{2}$ Centimeters, and secured with a middle sized cork into a middling wide encasing tube. The latter is drawn small at the top, in a right angle, which terminates in a boiling vessel, supported on an iron stand, over a lamp flame of 3 tubes. Out of the lower end of the encasing tube runs a tube connecting with a condensing tub. The graduated tube descends into a Mercury trough, out of which also runs a measuring tube, graduated by a "Nonius" graduating screw, showing the volume by the pressure of the quicksilver.

3566. *Murrel's Distilling Apparatus.* (See Ill., p. 237.) For either Chemical Laboratories, Polytechnic Schools or Provisional Assay offices. Com-

Hoffman's Steam-Tight Determination Apparatus.

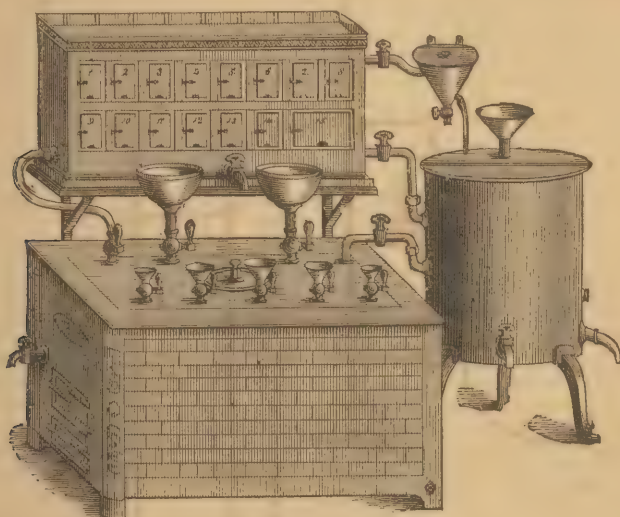


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MURREL'S DISTILLING APPARATUS.—Continued.

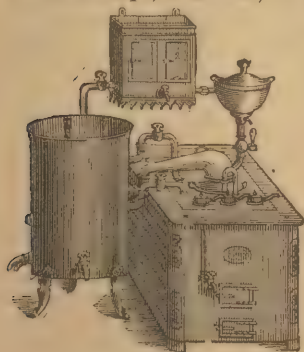
plete, ready to set into brick. The condensation of steam takes place in the cooling tub, generally; a large Sand Bath accompanies the apparatus, which can be heated at the same time and with the same fire in the hearth, in which case the cooling tub must be placed elsewhere. The length of this apparatus is $6\frac{1}{2}$ feet, depth 3 feet. The separate parts of this apparatus are: 1 Copper Steam-boiler, tinned inside; 1 Cooling Tub with cover and level tubes; 1 Filling Funnel; 2 large Caps with ball Stop-cocks; 5 small ditto; 1 Tin Alimentary Feeding Tube; Glass Water Gauge; Copper tinned Steam Drying Box, with 15 compartments; 1 Steam-pipe, running from the Steam-boiler to the Drying Box; 1 ditto, to the Cooling Tub from the Drying Box; 1 Winding Tube; Detaining Pins; Filtering Funnel, with Binding Tubes; 3 Intermediary Stop-cocks on the Steam-pipe; 3 Dogshead Stop-cocks for the Steam-boiler; Drying Case; Cooling Tub; Steam-boiler Plate (2 entire); Pedestal for the Cooler; Board for the Drying Case; 2 Props for ditto; Fish-bellied Roast, etc., etc.

MÜRRLE'S DISTILLING APPARATUS. imported only to order. (*For description, see pp. 235, '36.*)

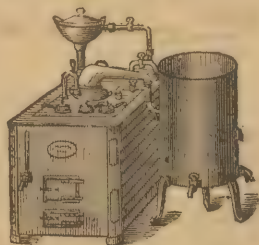


3566

3567. Distilling Apparatus, with Adjuncts, according to Dr. Mohr, consisting of: 1 Distilling Alembic of 2 gals.; Water Jacket, Steam-pipe, Neck; Angular Condensing Tubes; Steam-pipe, with Transverse Stop-cock; Condenser for distilling water; large and small Detaining Pins; Alimentary Feeding Pipes; 2 Apparatus Boxes of 24 oz.; 1 ditto, of 12 oz.; 1 ditto, of Emilian shape, of 24 oz.; 2 Faucets; Steam-pipe, with Intermediary Stop-cocks from the Cap into the Steam-pipe which conducts the distilled water into the Cooler; Casseroles, with cover, $3\frac{1}{2}$ qts.; ditto, of Emilian, of 2 qts.; 2 Intermediary Stop-cocks; 2 Dogshhead Stop-cocks on the Steam-boiler and



3567



3568

Cooling Tube; 1 little Stop-cock on the Cap; Brass Connectors, hermetically sealed on the Apparatus, Tubes and Faucets; Copper Steam-boiler of 30 qts.; Cooling Tub of 125 qts.; 2 level Tubes with Funnel; Glass Water Gauge; Cap of one of the Evaporating Dishes; Front Plate; Covering Plate; Side Frame; Hot-air Passage; Fish-bellied Roast; Iron Steam-boiler Plate; Little Ring Plates on the Cap; Wooden Pedestal; Knob, Feet and Binding of the Crank Hands; Brush, Plaster Model, etc.

3568. Distilling Apparatus, Dr. Mohr's, together with 1 Dry Box, 1 2-gal. Still, Water Jacket, Steam Tube, Neck, Angular-shaped Worm, Steam Tube, with Intermediary Stop-cock; Worm for distilling water; Alimentary Feeding Pipe; 2 Apparatus Boxes, *a*, 24 oz.; 1 ditto, of 12 oz.; 1 ditto, Emilian, of 24 oz.; 2 Faucets; Steam Pipes, with Intermediary Stop-cock, running from Steam-boiler to the Cooling Tub and Drying Box; little Stop-cock on Cap; Brass Connectors, hermetically sealed; Steam-boiler, of copper, of 39 qts.; Cooling Tub of 125 qts.; 2 Level Tubes, with Funnel; Glass Water Gauge; Cap of one of the Casseroles; Steam Drying Box, with two compartments with two perforated shelves; Front Plate; Covering Plate; Side Frame; Hot-air Passage; Fish-bellied Roast; Iron Steam-boiler Plate; Wooden Pedestal; Little Ring Plates on the Caps; Knob, Feet and Binding of the Crank Handle; Brush, Plaster Models, etc.

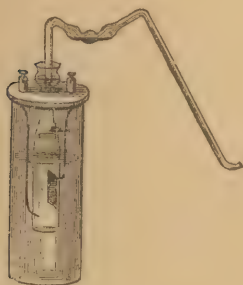
3569 is of a construction similar to 3568, only with *smaller dimensions*, its depth being a space of 2 ft. 4 in., and, in its front, inclusive of a space under the Cooling Tub (to place Flasks) is 4 ft. 5 in., and it consists of 1 Distilling Alembic, with Cover, of 6 qts.; Water Jacket; Steam Pipe, with Intermediary Stop-cock; Cooling Tubes for distilling water; 2 Detaining Pins; Alimentary Feeding Pipe; 2 Apparatus Boxes of 12 oz.; 1 ditto of 6 oz.; 2 Faucets; Steam Pipe, with Intermediary Stop-cock, from the Cap into the Steam Pipe which conducts the distilled water into the Cover; Casseroles, with Cover, of 1½ qts.; 2 Intermediary Stop-cocks; 2 Dogshead Stop-cocks on Steam-boiler and Cooling Tub; little Stop-cock on Cap; Brass Conductors, hermetically sealed; Copper Steam-boiler of 18 qts.; Cooling Tub of 60 qts.; 2 Level Tubes, with Funnel; Glass Water Gauge; Cap of one of the Casseroles; Front Plate; Cooling Plate; Fish-bellied Roast; Steam-boiler Plate; Pedestal on the Tub, with Stationary Screw; Knob, Feet and Binding of the Crank Handles; Brush, Plaster Model, etc.

In addition to the foregoing illustrated styles, I have facilities for importing others similar in character.

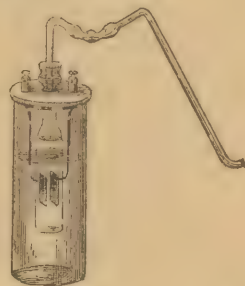
3571.—BUNSEN'S APPARATUS, for GAS ANALYSIS.

| | |
|---|----------------|
| 1248a. Absorptiometer, for Measuring the Absorption Power of Gases. . . | \$50.00 |
| 2410. Gasometer, Bunsen's, Mercurial Graduated Millimeters. | 2.75 |
| 2888. Gas Photometer, Bunsen's, 5 feet long, carefully registered scale with sliding and reflecting screen, complete, as used in the University of Heidelberg, with gauge. | \$30.00 |
| 2411. Gas Meter, with Exposed Indices, showing tens, hundreds, and thousands Pressure Indicator Regulator, and Delivery Jet. | \$50.00 |
| 2889. Gas Regulation Burner. | 5.00 |
| 3572. Ditto, Regulator, Kemp's, ordinary. | 3.50 |
| 2413. Ditto, with Bunsen's new improvement. | 4.00 |
| 2407. Gas Tubes, registered in cubic Centimeters. | \$1.25 to 2.50 |
| 2418. Ditto, 5 cubic inches, in tenths, each. | 1.75 |
| 2417, 18. Ditto, or Absorption Tubes, lipped, in Millimeters. | \$1.75 to 2.50 |
| 1407. Ditto, Syphon Barometer, engraved scale, with support. | 15.00 |
| 3572. Apparatus , for the Determination of Sulphur by Chlorine. | 7.50 |
| 3573. Ditto, for preparing Nitrogen by Chlorine and Ammonia, consisting of Glass Flask, Receiver, Delivery Tubes, Support and Burner. | \$7.50 |
| 3574. Ditto, for the Determination of Nitrogen, after Dumas. | 15.00 |
| 3575. Ditto, for preparing Nitrous Oxide, consisting of Gas-burner or Lamp, Woulff's Bottle, Gallows Screw Connector, fitted with Mouth-piece and Stop-cock, bent Tube with Connector, Pint Retort and Receiver, and Lamp Stand of iron. | \$12.00 |
| 3576. Ditto, for combining the Gases requisite for forming Exhilarating Gas, consisting of Bell and Receiver, each with ground edges, between which is placed a Plate of Glass, ground on both sides. | \$2.50 |
| 3577. Ditto, for generating Chlorine Gas, consisting of Lamp, Pneumatic Cistern, Iron Stand, Flask, Sand Bath, etc. | \$10.00 |
| 3578. Ditto, Deflagrating, for making Anhydrous Phosphoric Acid by burning Phosphorus in Oxygen. | \$3.50 |
| 3579. Ditto, consisting of Carboys of Earthenware, with Filter for generating Chlorine. | |

- 3580.** Apparatus for preparing Nitrogen by burning Phosphorus in air, \$3.50
3581. Ditto, to illustrate the Diffusion of Gas..... 2.00
 2189. Ditto, for showing Endosmosis..... 1.50
3582. Ditto, to illustrate the Formation of Chloride of Ammonia by condensing the vapors of Hydrochloric Acid and Ammonia, consisting of a Glass Flask holding one gallon, to which are attached two Tubes by means of an India Rubber Connection.....\$2.50
3583. Ditto, for making Chloride of Sulphur, consisting of two tubulated Receivers, Chloride of Calcium Tube, Bulb Tube, Gas Flask, etc., after Mitscherlich.....\$7.00
3584. Ditto, Mohr's Ether Extraction.....\$8.00
 (See also list of Hoffman's Apparatus.)
3585. Ditto, Bunsen's, for obtaining pure Hydrogen Gas..... 6.50

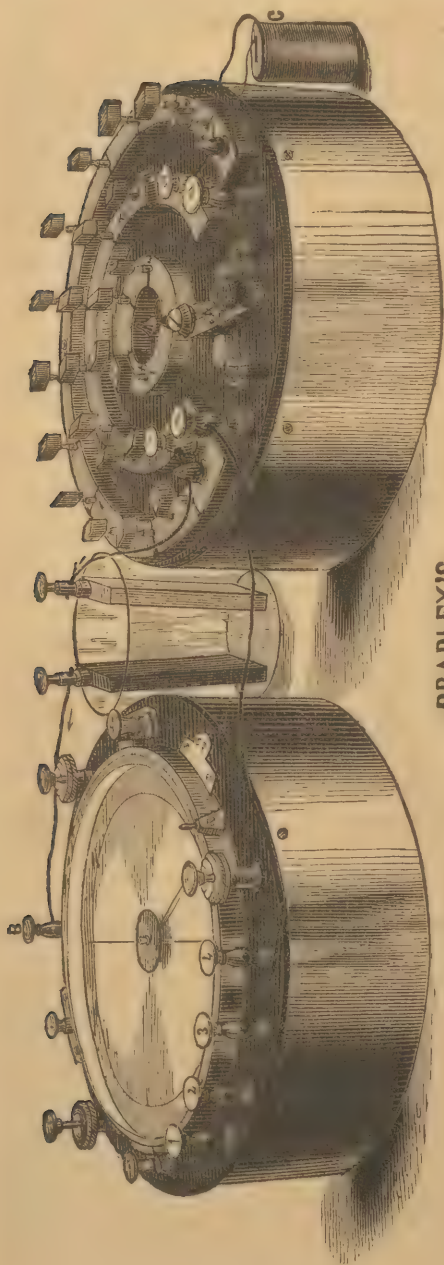


3585



3586

- 3586.** Ditto, ditto, for obtaining pure Oxhydrogen by the Decomposition of Water.....\$6.50
 2419. Porcelain Apparatus, for Washing Gases, consisting of two deep Porcelain Dishes, fitting into each other with concentric Chambers, Receiver and Vent.....\$5.00
 3463. Woulff's Apparatus, for Washing Gases, 8 oz..... 5.50
 " Ditto, ditto, ditto, ditto, ditto, pints..... 7.00
 " Ditto, ditto, ditto, ditto, ditto, quarts..... 8.00
 1602. Lamps, suitable for the above, each..... 1.25
 3239. Iron Support for ditto..... 1.50
 1731. Apparatus, for Generating Chlorine, Safety Funnel and Delivery Tube, Quart Flask.....\$1.35
 2396, '97. Ditto, for Sulphuretted Hydrogen, large size, 2 Bulbs, Kipp's, \$6.00 to 7.50
 2401. Ditto, ditto, smaller, Babo's..... \$1.00
 2194. Ditto, for the Extraction of Ether, 1 gal..... 14.00
 2022. Ditto, for Displacement, after Guibourg..... 12.00
 2019. Ditto, for the Extraction of Ether, small, or Displacement Apparatus..... .75
 3406. Bottles for Washing Precipitates, Faraday's pints..... .50
 " Ditto, ditto, ditto, ditto, quarts..... .75
 2233. Evolution Flask, complete.....\$1.25
 Gas Bottles, with Receiving and Delivery Tube..... .75
 2402. Hydrogen Generators.....\$5.00 to 40.00
 2405. Oxygen ditto, quarts.....\$4.50
 " Ditto, ditto, $\frac{1}{2}$ gal..... 6.00
 2407. Pepy's Gas Holder, of Copper, 10 gals..... 27.50
 " Ditto, ditto, ditto, ditto, 15 gals..... 37.50
 2406. Ditto, ditto, Japanned Zinc, 10 gals..... 22.50
 " Ditto, ditto, ditto, ditto, 15 gals..... 27.50



**BRADLEY'S
APPARATUS FOR
ELECTRIC MEASUREMENT.**

3570

3570. Bradley's Apparatus for Electric Measurement, for accurately determining the electro-motive force, resistance and strength of batteries. For directly measuring the resistance of all conductors of electricity, telegraph wires, etc., from the $\frac{1}{100}$ of an ohm to $\frac{1}{1000}$ ohms. For determining the insulation resistance of telegraph lines up to millions of ohms. For locating breaks, faults and crosses on telegraph lines, cables, etc. For determining the quantity of metal of any kind deposited in a given time in the process of electroplating, gilding, etc.

For determining the specific conductivity of metals, especially of copper, a matter of great importance to those manufacturing or using wire for telegraphic or other electrical purposes, and in short, the capacities of all other instruments for similar purposes combined are embraced in this one, in a substantial and compact form, convenient for transportation, and comparatively safe from injury. Its operations are exceedingly exact, and in no wise complicated or difficult. Descriptive Pamphlets may be had on application.

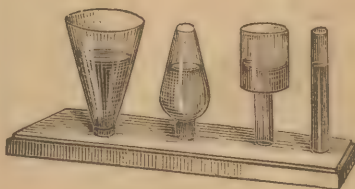
Price, each, \$200

APPARATUS FOR HEAT.

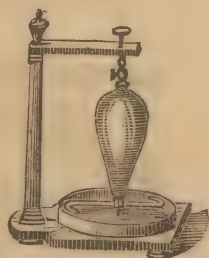
| | | |
|--------------|---|--------|
| 3587. | Apparatus, for showing Specific Heat..... | \$5.00 |
| 1898. | Conductometer..... | 2.50 |
| 3588. | Apparatus to show Spheroidal State of Liquids, as per No. 52 of Tyndall, on Heat..... | \$2.00 |
| 3589. | Trevelyan Rocker, according to Tyndall, Fig. 27..... | 6.00 |
| 3590. | Straight Roller, Electrical, according to Tyndall, Fig. 30..... | 8.00 |
| 3591. | Elliptical Roller, according to Tyndall, Fig. 31..... | 10.00 |
| 3592. | Apparatus, to show Influence of Pressure at Boiling Point, Fig. 35..... | \$8.00 |
| 3593. | Ditto, showing Development of Heat by Compression of Air, Fig. 13..... | \$4.00 |
| 1779. | Bunsen's Furnace, for Organic Combustion, imported, 25 Burners..... | 60.00 |
| 1780. | Ditto, domestic, 25 Burners..... | 50 00 |
| 3594. | Ditto, 18 Burners..... | 40.00 |
| 1781. | Ditto, 10 Burners..... | 30.00 |
| 3595. | Sefstrom's Chemist's Forge, imported to order..... | 175.00 |
| 1476. | Blow-table and Blast-pipes..... | 40.00 |
| 1778. | Liebig's Combination Furnace, 24 in., \$3.25; 18 in..... | 2.25 |
| 1809. | Ditto, Condensers, Glass, small..... | 1.00 |
| 1811. | Ditto, ditto, Japanned Tin..... | 3.50 |
| 1812. | Ditto, ditto, Brass, soldered..... | 6.50 |
| 1813. | Ditto, ditto, ditto, brazed..... | 10.00 |



3599



3603



3605

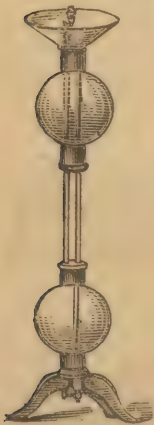
| | | |
|---|--|---------|
| 3596. | Carr's Ice Freezer, imported to order..... | 150.00 |
| 2992. | Pulse Glasses, carefully packed in pasteboard case, each..... | .50 |
| 2190. | Eolipile, or Ether Jet..... | .50 |
| 3597. | Parabolic Reflectors, with Iron Balls, Support and Stand of Brass, 10 in..... | \$12.00 |
| 2878. | Ditto, ditto, ditto, ditto, 13 in..... | 16.00 |
| " | Ditto, ditto, ditto, ditto, 15 in..... | 25.00 |
| 2879. | Ditto, ditto, ditto, ditto, nickelized, 10 in..... | 15.00 |
| " | Ditto, ditto, ditto, ditto, ditto, 13 in..... | 19.00 |
| " | Ditto, ditto, ditto, ditto, ditto, 15 in..... | 28.00 |
| The Nickelized Reflectors are not easily corroded, and retain their polish. | | |
| 2529. | Psychrometer, August's, wet and dry bulb, mounted..... | \$12.00 |
| 3304. | Differential Thermometers, Leslie's, each..... | 2.50 |
| 3598. | Radiator, Leslie's, each..... | 2 50 |
| 3004. | Pyrometer, Three Metals, ordinary..... | 6.00 |
| 3005. | Ditto, ditto, ditto, extra fine, with Brass Revolving Alcohol Holder..... | \$12.00 |
| 3599. | Brass Ball and Gauge Ring, wooden handle, showing Expansion and Contraction, per pair..... | \$3.25 |
| 1808. | Compound Bar, showing Unequal Expansion..... | 1.00 |

APPARATUS FOR HEAT.—Continued.

| | |
|---|--------------------------------------|
| 1827. Apparatus, for showing the slow Conduction of Heat downwards by Fluids..... | \$2.50 |
| 2268. Glass Fire Syringe, with Tinder, 10 in. long..... | 8.00 |
| 1347. Flameless Lamp..... | 1.50 |
| 1960. Davy's Safety Lamp, for Miners, etc..... | 7.50 |
| 2422. Wire Gauze, in frame..... | .75 |
| 1912. Cryophorus, Wollaston's, double bulb..... | 2.00 |
| 1913. Ditto, ditto, single bulb..... | 1.75 |
| 2527, '28. Hygrometers, Saussure's..... | \$4.00, 8.00 and 12.00 |
| 2526. Ditto, Mason's..... | 4.50 |
| 3306. Maximum and Minimum Thermometers..... | 4.00 |
| 3310. Metallic Thermometers, Watch Form..... | 20.00 |
| 1290. Air ditto..... | .25 |
| 3415. Water Hammers..... | .75 |
| 2563. Brass Jets, for Burning Gases..... | .50 |
| 2564. Ditto, ditto, ditto, with Stop-cock and Flat Tip..... | 2.00 |
| 1791. Combustion Tubes..... | .40 to .50 |
| 3306. Day and Night Thermometers..... | 4.00 |
| 1477, '79, '80, '81. Oxhydrogen Jets..... | \$4.00, 10.00, 15.00 and 20.00 each. |
| 1649. Candle Bombs, per doz..... | .30 |
| 3600. Hygrodeik, Edson's, for ascertaining the sensible Temperature due to Evaporation, the actual Humidity, Dew Point and absolute amount of Moisture..... | \$15.00 |

APPARATUS for HYDRAULICS AND HYDROSTATICS.

| | |
|--|---------|
| 3601. Model of Forcing Pump, complete..... | \$20.00 |
| 3254. Tantalus Cup..... | 2.00 |



2098



3606



3619



3620



3629

| | |
|---|----------------|
| 3602. Archimedes Screw..... | 5.00 |
| 3603. Equilibrium Tubes, a set of 6..... | 3.50 |
| 2098. Hero's Fountain, of Glass..... | 18.00 |
| 3604. Barker's Mill, plain..... | 6.00 |
| 3605 Ditto, ditto, with Stop-cock..... | 10.00 |
| 1686. Hydrometer Jar, with Balloon Car..... | 1.50 to 5.00 |
| 2524. Nicholson's Hydrometer..... | 6.00 |
| 3606. Archimedes principle, Brass Cup and Cylinder..... | 3.50 to 6.50 |
| 2461, 2520 Hydrometers, various..... | .75 to 2.00 |
| 2544, '44. Ditto, Jar, Glass Foot, with or without Lip..... | 1.00 to 2.00 |
| — Specific Gravity Balance..... | 15.00 to 20.00 |

APPARATUS FOR HYDRAULICS AND HYDROSTATICS.—Continued.

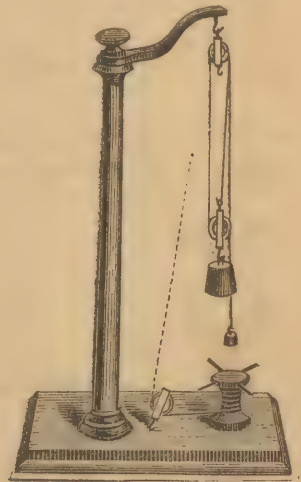
| | |
|---|--------------|
| 1684. Cartesian Imps..... | 20 to \$1.50 |
| 3247. Glass Syphons..... | .50 to 1.50 |
| 3607. Wurtemberg Syphons..... | 1.00 |
| 3608. Diving Bell..... | 6.50 |
| 2994. Forcing Pump, of Glass..... | 1.50 |
| 2993. Lifting Pump, of "..... | 1.50 |
| 1656. Capillary Tubes and Pan..... | 2.00 |
| 1654. Ditto. Plates, with Pan, to show the Parabolic Curve..... | 2.00 |
| 3609. Apparatus for showing the Principle of Archimedes' Screw, consisting of Archimedes' Screw, mounted on Wheels. When the Rod holding the Screw is swiftly revolved, the machine will be propelled..... | \$10.00 |

APPARATUS FOR MAGNETISM.

| | |
|---|-------|
| 3610. Electro Magnet..... | 2.50 |
| 3611. Ditto, ditto, on Stand, to lift Weights..... | 16.00 |
| 2126. Ditto, ditto, Revolving, Page's..... | 8.00 |



3622



3625a



2624



3632

| | |
|---|------|
| 3612. Circular Magnets, with Ring..... | 4.75 |
| 3613. Helix on Stand..... | 4.50 |
| 3614. Contracting Helix..... | 6.00 |
| 3615. Voltaic Pistol..... | 4.00 |
| 2647. Horse-Shoe Magnets, 3 in..... | .30 |
| " Ditto, ditto, ditto, 3½ in..... | .60 |
| " Ditto, ditto, ditto, 4 in..... | .75 |
| " Ditto, ditto, ditto, 6 in..... | 1.25 |
| " Ditto, ditto, ditto, 10 in..... | 4.50 |
| Ditto, ditto, ditto, compound..... | 4.00 |

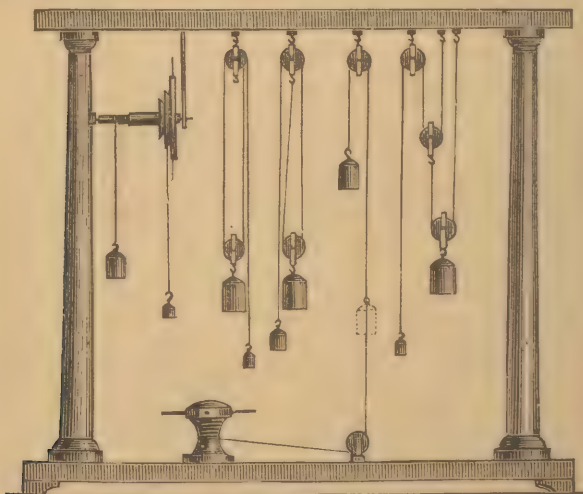
APPARATUS FOR MAGNETISM.—Continued.

| | |
|---|-----------------|
| 2646. Magnets, Single Bar..... | \$1.00 |
| 2649. Ditto, Pair, with Armature..... | 3.50 |
| 3616. Ditto, ditto, ditto, Wheel Armature..... | 3.25 |
| 2650, 1800. Magnetic Needle, on Stand..... | \$1.75 to 2.50 |
| 2651. Dipping Needle..... | 2.00 |
| 3617. Adhesion Plates..... | 1.50 |
| 3618. Lodestone, according to size..... | .50 and upwards |
| 3619. Gassiot's Cascade..... | \$2.50 |

(See also Electricity, in regular Catalogue, under E.)

APPARATUS FOR MECHANICS, Made only to Order.

| | |
|---|--------|
| 3620. Inertia Apparatus..... | \$2.50 |
| 1772 Collision Balls, Lignumvitæ, set of 5..... | 3.50 |
| 3621. Centre of Gravity, set of 8..... | 11.00 |
| 3622. Leaning Tower..... | 1.25 |
| 3623. Whirling Table and Accessories..... | 33.00 |
| 3624. Centrifugal Forces, per set..... | 12.00 |
| 3625. Illustration of Weights and Pulleys..... | 33.00 |



3625

| | |
|--|-------------------|
| 3626. Screw on Mahogany Frame..... | 6 00 |
| 3627. Sets of Solids..... | 5.00 |
| 3628. Dissected Cone..... | 2.50 |
| 3629. Gyroscope..... | 8.00 |
| 3630. Atwood's Falling Machine..... | \$75.00 to 150.00 |
| 3631. Apparatus, Brass, showing the principle of the Reveral Balance..... | \$15.00 |
| 3632. Inclined Plane..... | 4.00 |

OPTICAL APPARATUS.

| | |
|--------------------------------------|-------------------------|
| 2168. Duboscq's Electric Lamp..... | \$400.00 |
| 2169. Serrin's, ditto, ditto..... | 450.00 |
| 2640. Magic Lantern, German..... | 25.00 |
| 2639. Ditto, ditto French, each..... | \$6.00, 10.00 and 25.00 |

OPTICAL APPARATUS.—Continued.

| | |
|--|------------------|
| 3633. Illustrations on Glass, for Magic Lanterns (Fancy Illustrations), per set..... | \$3.00 to 10.00 |
| 3634. Electric Lamp, by clock-work, made to order..... | \$150.00 |
| 3635. Ditto, Lantern..... | 50.00 |
| 2607. Magnesium ditto..... | 25.00 |
| 2608, 2612. Oxhydrogen Calcium Light..... | \$7.50 to 25.00 |
| 2613. Carbon Points, mounted..... | 20.00 |
| 3636. Ditto, ditto, ditto, with Reflector..... | 25.00 |
| 3637. Ditto, ditto, ditto, in Lantern..... | 27.50 |
| 3638. Ditto, ditto, without Lenses and small Reflector..... | 30.00 |
| 1679. Ditto, Pencils, per inch..... | .06 |
| 3639. Spectroscopes, Duboseq's, imported to order..... | 210.00 |
| 3139. Ditto, Browning's, 2 Prisms..... | 160.00 |
| 3138. Ditto, Heidelberg, single Prism, with 2 Lamps, 2 Holders, 12 Platina Ends..... | \$65.00 |
| 3136, '37. Ditto, Browning's, Hand..... | \$15.00 to 18.00 |
| 1728. Charts, showing the Spectra of Metals and Stars, translated into English, each..... | \$3 50 |
| 3257. Merk's Telescope, High Power, with Strap for mounting on Stand..... | \$30.00 |
| 2681. Gundlach's Microscope, 2 Eye-pieces, 5 Objectives, with Slides, etc., all in an elegant, highly polished case; a very superior article, complete..... | \$200.00 |
| 2680. Nacht's Compound Microscope, French..... | 20.00 |
| 2678. Ditto, ditto, ditto, ditto..... | 15.00 |
| 2682. Accurate Solar Microscope, complete, in fine box, hinged Cover, etc..... | \$200.00 |
| 1768. Collection of Rare Specimens, for Spectral Analysis, with Platinum Wires on Glass Foot, and Stands to hold them, with Sliding Box..... | \$7.50 |
| 2630. Watchmakers' Lenses..... | 2.50 |
| 1769. Collection of Objects, for Solar Microscope, mounted..... | 25.00 |
| 1871. Microscopic Covers, Circles, very thin, per ounce..... | 4.00 |
| 1872. Ditto, ditto, Squares, per ounce..... | 3.00 |
| 2637. Ditto, Slides, assorted, per doz..... | .50 |
| 2629. Camera Lens, or Asplanat, by Steinheil..... | 30.00 |
| 2976. Set of 3 Hollow Prisms, mounted on Stand..... | 30.00 |
| 3640. Ditto, Acromatic ditto, ditto, ditto..... | 30.00 |
| 3641. Single Rectangular, ditto, ditto..... | 16.00 |
| 2973. Bottle Prisms..... | \$6.00 to 12.00 |
| 2988. Equilateral ditto, 35x33 N. Y. in., each..... | 5.00 |
| 2983. Acromatic ditto, 30x27 N. Y. in., per pair..... | 5.00 |
| 2984. Ditto, ditto, 35x32 N. Y. in., per pair..... | 6.00 |
| 2985. Ditto, ditto, 40x36 N. Y. in..... | 7.25 |
| 2986. Ditto, ditto, 45x45 N. Y. in..... | 9.00 |
| 2981. Prisms, for Dark Chambers, 15 Lines, each..... | 2.00 |
| 2982. Ditto, ditto, ditto, ditto, 21 Lines, each..... | 2.50 |
| 2974. Elegant Hollow Prism, Bisulphide of Carbon Prism, all the Joints fitted exactly, without flaw, blister or striated lines; a valuable gem for a Cabinet, and made by the celebrated Dr. Steinheil, of Munich..... | \$50.00 |
| 2959. Polarization Apparatus, Mitscherlich's, with Extra Tube..... | .60 00 |
| 3642. Model of the Human Eye, showing the Motion..... | 2.50 |
| 2234. Eye Model, showing the Reflection on the Eye Lens, with the use of Spectacles..... | \$15.00 |
| 2621. Magnifying Lenses, for Assayers..... | 2.50 |
| 2631. Set of Glass Lenses, 6, for Demonstrations..... | 2.50 |
| 3643. Mirrors, Convex and Concave..... | 2.75 |
| 2632. Apparatus, for Defraction of Light..... | 7.50 |
| 2810. Ditto, for showing Monochromatic Light, 5 Burners..... | 12.00 |
| 3109. Ditto, Hoffman's, for Inverting the Soda Flame..... | \$3.00 to 3.50 |
| 3644. Ditto, for showing the Oxidation of the Soda Flame..... | 2.00 |
| 3645. Ditto, Hoffman's Flame Apparatus, with Argand Burner..... | 5.00 |
| 2622. Lenses, Coddington..... | 2 25 to 2.50 |
| 2623, '24, '25. Ditto, Stanhope, German Silver..... | 2.00 to 3.50 |

OPTICAL APPARATUS.—Continued.

| | |
|---|-------------------|
| 2526. Loups, single, 9 lines, .75; 11 lines, \$1.00. | |
| 2627. Ditto, double..... | \$1.25 to 1.50 |
| 2628. Ditto, triple..... | 1.50 to 1.75 |
| 2633. Apparatus, for the Recomposition of Light..... | 2.50 |
| 2676. Microscopes, No. 1, Universal Joint..... | 7.50 |
| 2677. Ditto, No. 3..... | 10.00 |
| 2678. Ditto, No. 4..... | 15.00 |
| 2679. Ditto, No. 1, in two columns, etc..... | 25.00 |
| 3144, '45. Lantern, Browning's, for projecting Spectra on the Screen. | \$50.00 to 150.00 |

APPARATUS FOR ORGANIC ANALYSIS.

| | |
|---|----------------|
| 2948. Air Pump Plate, 7 $\frac{1}{4}$ in..... | \$25.00 |
| 1362. Aspirator, the same as used in Apparatus 1352, on p. 15..... | 1.50 to 2.50 |
| 1360 to 1362. Aspirator, glass..... | 2.00 to 3.00 |
| 1365. Aspirator Tubes..... | .50 |
| 3646. Complete set of Apparatus for Organic Analysis, according to Liebig..... | \$45.00 |
| 1714 to 1720. Chloride of Calcium Tubes..... | .15 to .60 |
| 1776. Combustion Boats, porcelain..... | .20 to .50 |
| 2926. Ditto, ditto, Platinum, per grain..... | .03 |
| 2375. Ditto, Furnaces, Bunsen's gas..... | 60.00 |
| 1780. Ditto, ditto, American gas..... | 50.00 |
| 1781. Ditto, ditto, French gas..... | 30.00 |
| 1782 to 1785. Ditto, ditto, to be used with Kerosene..... | 12.00 to 40.00 |
| 1777. Ditto, ditto, Storer's..... | 1.50 |
| 1778. Ditto, ditto, Liebig's Charcoal..... | 2.50 to 3.00 |
| 1789. Ditto, ditto, Foil, of Copper, per ounce..... | .05 |
| 1791. Combustion Tubing..... | .40 to .50 |
| 1792. Ditto, ditto, for Nitrogen determination..... | .35 to .45 |
| — Copper Turnings (see Chemicals), per lb..... | 1.00 |
| 2423. Ditto, Gauze, per sq. ft..... | .85 |
| 2050. Drying Baths..... | 2.50 |
| 2061, '62. Drying Tubes, Liebig's..... | .50 to .60 |
| 2343. Filling Tubes..... | .50 |
| 2417, '18. Graduated Tubes for Nitrogen determination..... | 1.25 to 2.50 |
| 2416. Glass Tubes, for weighing substances to be analyzed, per doz..... | 2.00 |
| 3387. India Rubber Tubing, $\frac{1}{4}$ in. bore, per ft..... | .10 |
| 2664. Mercury Jar, of glass..... | 1.00 to 2.00 |
| 2670. Ditto, Trough, Porcelain, to hold 5 lbs. of Mercury..... | 1.00 |
| 2671. Ditto, ditto, ditto, 16 lbs. ditto..... | 2.00 |
| 2853. Nitrogen Bulbs, Horsford's..... | .75 |
| 3647. Ditto, ditto, Simpson's..... | 1.00 |
| 2968. Potash Bulbs, Geisler's or Mohr's..... | 1.00 |
| 2966. Ditto, ditto, Liebig's..... | .75 |
| 2969. Ditto, Pipettes..... | .50 |
| 2343. Suction Tubes..... | .50 |
| 3239. Wood Supports..... | 1.50 |

CHEMICALS.

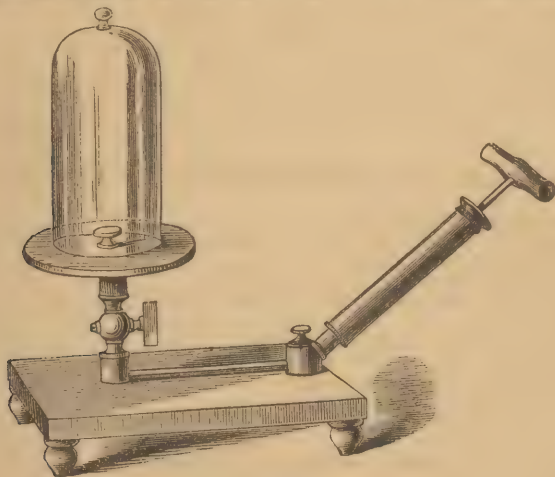
| | |
|----------------------------------|-----------------------------|
| Black Oxide of Copper. | Chloride of Calcium, fused. |
| Chromate of Lead, pure fused | Chlorate of Potash, cryst. |
| Soda Lime. | Copper, in fine strips. |
| Bichromate of Potash, cryst. | Ditto, Turnings. |
| Caustic Potash. | Asbestos, long fibre. |
| Chloride of Calcium, crude, dry. | |

APPARATUS FOR PNEUMATICS.

| | |
|--|----------|
| 2946. Air Pumps, large and powerful..... | \$100.00 |
| 2951. Ditto, ditto, Mischterlich's..... | 10.00 |
| 2950. Ditto, ditto, ditto, mounted..... | 15.00 |

APPARATUS FOR PNEUMATICS.—Continued.

2952. Air Pumps, Liebig's, Brass Cock\$15.00
 2948. Ditto, ditto, with Plate and strong Clamp to attach to a Table in
 place of Mahogany base.....\$20.00



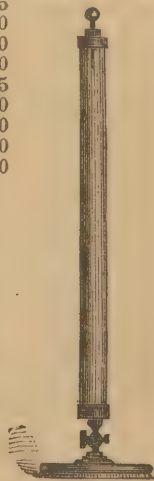
2948

2948. Air Pumps, mounted on a fine polished Mahogany base, with heavy ground glass Plate.....\$25.00
 The more costly grades of Air Pumps can be furnished, when desired, of first-class workmanship.

1443. Swelled Glass Receivers, with knob, $\frac{1}{2}$ gal. \$1.50, 1 gal. 2.00, 2 gal. 3.00
 1444. Ditto, ditto, ditto, open tops, $\frac{1}{2}$ " 1.75, 1 " 2.50, 2 " 3.50
 1449. Plain ditto, ditto,.....quarts, 75 cts., $\frac{1}{2}$ " 1.00, 1 " 1.50
 1446. Ditto, ditto, ditto, tall, with knobs, " 75 " $\frac{1}{2}$ " 1.00, 1 " 1.50
 1442. Ditto, ditto, ditto, flat, ditto,.....6 in. \$1.25, 8 in. 1.75
3648. Receiver, with sliding Rod, Hook and Ball.... 5.00
 Ditto, the Cap and Stop-cock fitted, extra..... 2.00
 3416. Water Hammer..... 1.00
 2555. Bladder and Hand Glass..... .75 to 1.25
3649. Magdeburg Hemispheres\$7.00 to 10.00
3650. Bolt Head Experiments..... 4.00
3651. Mercury Shower..... 3.00
 1289. Air Balloons, glass, for weighing Air, 1 gal..... 1.00
 1405. Ditto, ditto, rubber and Gold-beater's, 2 gal..... \$1.50 to 5.00
 Ditto, ditto. See Balloons.
 3338. Torricellian Experiments. \$4.50
3652. Guinea and Feather Tube, \$8.00 to 10.00
3653. Bell, in Vacuo 4.00
 1684. Cartesian Imps, singly, from .25 to 1.00
 1686. Ditto, ditto, in Bottles, from \$1.50 to 1.75
3654. Model, Hydrostatic Press, \$20.00
 2459. Hydrolyse, or Forcing Pump, producing a constant stream of water, enclosed in a fine polished Velvet-lined Case.....\$4.00



3649



3652

APPARATUS FOR PNEUMATICS.—*Continued.*

| | |
|---|----------------|
| 2460. The foregoing can also be used as a Syringe, supplied with Male and Female Joints, in fine polished Velvet-lined Cases..... | \$5.00 |
| The above is the best form of Injecting Syringe known, as its Valves and all its appurtenances are all Metallic. | |
| 3655. Hydrostatic Balance..... | \$10.00 |
| 3656. Apparatus, for upward and downward Pressure..... | 14.00 |
| 3657. Barometer Apparatus..... | 6.00 |
| 1822. Apparatus for Air Cylinder..... | 12.00 |
| 2316. Freezing Apparatus..... | \$3.50 to 6 00 |
| 1912. Cryophorous..... | 2.00 |
| 1648. Bursting Squares, per doz..... | 2 50 |
| 3658. Apparatus, for illustration of Marriotte's Laws..... | 10.00 |
| 2904. Bubble Pipe, for Gas..... | .75 |
| 2313. Fountain, in Vacuo..... | 9.00 |
| 2953, '54, '55. Pneumatic Trough, Japanned, 12 in. 3.00, 15 in. 3 50, 16 in. 4.50 | |
| 2956. Ditto, ditto, Glass, solid, 12x5 in..... | 4.50 to 8.00 |
| — Ditto, ditto, with Brass Sliding Shelf..... | 1.00 |
| 2957. Ditto, Turning Corners, very stout, 12x6 in..... | 7.00 |
| 2958. Ditto, ditto, ditto, ditto, 14x7 in..... | 8.50 |
| — Ditto, ditto, Porcelain, for use with Mercury. See Mercury Troughs. | |
| 1441. Bee-Hive Shelves, Porcelain, small..... | .25 |
| “ Ditto, ditto, large..... | .75 |
| “ Ditto, ditto, ditto, Earthen..... | .25 |
| Fittings. See Stop-cocks, etc. | |

3659. APPARATUS, recommended by Dr. Scheibler and others, for the Analysis of SUGAR, SYRUPS, etc.

| | |
|--|------------------|
| 1257. Apparatus for determining the quantity of Carbonic Acid in Bone Ash, accompanied with instructions, bottles, etc., corrected by Dr. Scheibler. | \$35.00 |
| 1259. Dr. Scheibler's New Apparatus, for Quantitative Volumetric Analysis of Carbonic Acid..... | \$45.00 |
| 1313. Salleron's Alembic, for Testing the percentage of Alcohol in Saccharine Solutions..... | \$25.00 |
| 1374. Balance for Specific Gravity, sensible to $\frac{1}{10}$ of a millogramme..... | 77.00 |
| 1376. Ditto, ditto, for 200 grammes..... | 107.00 |
| 1648a. Colorimeter, for the examination of Sugar and Syrups..... | |
| 1949. Mixing Cylinders..... | 1.30 to 4.50 |
| 2044. Drying Baths..... | 15.00 |
| 2205 to 2230. Evaporating Dishes..... | .20 and upwards. |
| 2495 to 2499. Saccharometers..... | 75 to 2.50 |
| 2500. Ditto, according to Dr. Scheibler..... | 15.00 |
| 2635. Centimeter bottles, stoppered..... | .35 to 1.60 |
| 2636. Ditto, not stoppered..... | .25 to 1.00 |
| 2637. Ditto, with two marks on the neck..... | .60 to 1.25 |
| 2692. Mixing Bottles..... | 2.50 to 3.50 |
| 2959. Saccharimeters, or Polarization Apparatus, Mitscherlich..... | 60.00 |
| 2960. Ditto, Wild's, in Mahogany Case..... | 175.00 |
| 2961. Ditto, Soleil..... | 150.00 |
| 2962. Ditto, Soleil-ventzke..... | 225.00 |

APPARATUS FOR WATER ANALYSIS, ETC.

| | |
|--|--------|
| 3660. Apparatus for the Decomposition of Water, mounted on stand, \$2.50 | \$2.50 |
| 3661. Ditto, ditto, ditto, with cup complete, according to Faraday.. | 5.00 |
| 3662. Ditto, ditto, ditto, unmounted, Hoffman's..... | 6.50 |
| 3663. Ditto, ditto, ditto, mounted..... | 10.00 |
| 3664. Ditto, for the Determination of Water and Carbonic Acid in the atmosphere, after Fresenius..... | 12.00 |
| 3665. Ditto, for the Analysis of Mineral Waters, by Fresenius..... | 10.00 |

APPARATUS FOR WATER ANALYSIS, ETC.—*Continued.*

| | |
|--|---------|
| 2143. Bunsen's Apparatus, for Rapid Filtration | \$11.00 |
| 3666. Ditto, set usually employed, including Flasks, Funnels, Mould Holder and Cone | 18.00 |
| 2247. Support of Japanned Tin for Bunsen's Apparatus | 3.00 |
| 2252. Flasks, for Filtering, extra heavy glass, wide mouths, 16 oz. | .40 |
| “ Ditto, ditto, ditto, 24 oz. | .50 |
| “ Ditto, ditto, ditto, 32 oz. | .60 |
| 2319. Funnels, prepared expressly, and ground to an exact angle of 60 deg. on Moulds made for the purpose, 1½ in. | .15 |
| “ Ditto, ditto, ditto, 2 in. | .20 |
| “ Ditto, ditto, ditto, 3 in. | .30 |
| “ Ditto, ditto, ditto, 4 in. | .40 |
| “ Mould and Holder for preparing the Cone | .50 |
| 1830. Platinum Cone, for Supporting the Filter, price according to weight, per grain, about | .75 |

 VARIOUS FORMS OF APPARATUS,

ACCOMPANIED WITH

ACCURATE DRAWINGS AND SPECIFICATIONS,

MAY BE MADE

SPECIALLY TO ORDER,

EITHER IN

GLASS, BRASS, OR WOOD.

ORDERS ALSO FOR

TECHNICAL AND TEXT BOOKS,

WILL BE

EXECUTED PROMPTLY,

AND

PACKED WITH GOODS IN MY LINE, WITHOUT EXTRA CHARGE.

3667. Dr. SQUIBBS'

NEWLY INVENTED

UNIVERSAL LABORATORY SUPPORT,

Adapted to sustain Tubes of any size, up to 3 inches. Price, \$2.50

This SUPPORT supplies a want long experienced in the Laboratory, in substituting a single Apparatus for several varieties.

3668.—RELATIVE VALUE OF VARIOUS WEIGHTS AND MEASURES.

TROY AND AVOIRDUPOIS WEIGHTS.

| Pounds. | Pounds. | Pounds. | Ounces. | Grains. |
|---------------------|------------|---------|---------|---------|
| 1 Troy = 0.822857 | Avoir. = 0 | | 13 | 72.5 |
| 1 Avoir. = 1.215277 | Troy = 1 | | 2 | 28.0 |

3669.—RELATIVE VALUE OF TROY AND FRENCH WEIGHTS.

TROY.

| | | | | | | |
|---------------|-------------|---------|---------|----------|---------|--|
| Millegramme = | .0154 | grs. | | | | |
| Centigramme = | .1543 | | | | | |
| Decigramme = | 1.5434 | | | | | |
| Gramme = | 15.4340 | Pounds. | Ounces. | Drachms. | Grains. | |
| Decigramme = | 154.3402 | = 0 | 0 | 2 | 34.3 | |
| Hectogramme = | 1543.4023 | = 0 | 3 | 1 | 43.4 | |
| Kilogramme = | 15434.0234 | = 2 | 8 | 1 | 14. | |
| Myriagramme = | 154340.2344 | = 26 | 9 | 4 | 20. | |

3670.—The French Metre, or Unity of Length, at temperature of 32 deg. Cel. = 39.371 Eng. inch, at 62 deg. Fah.

The French Litre, or Unity of Capacity, at same temperature, = 61.028 Eng. cubic inches.

The French Gramme, or Unity of Weights, at same temperature, = 15.434 Eng. Troy grs.

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International Exhibition,

PHILADELPHIA, 1876

FIRST PREMIUM



E. B. BENJAMIN,

10 BARCLAY STREET, NEW YORK.

AWARDED FOR

EXCELLENCE OF DESIGN AND FINISH

CHEMICAL APPARATUS

AND

PURITY AND RARITY

OF

CHEMICALS.

I have lately discovered an improvement to the

Bunsen Burners,

which constitutes them non-retreating, and for which I have applied for a Patent.

It is expected that they will be ready to put on the market within the next six weeks.

For low evaporations, this new Burner is unequalled, besides being inexpensive.

E. B. BENJAMIN.

ERRATA.

Price of Potassa Cyanide, C. P. T., should be 25 cents per oz.

“ Tin Bisulphide, should be 65 cents per oz.

No. 10 BARCLAY STREET,

NEW YORK, *November 1, 1876.*

Thanking my many kind patrons for their generous support the past years, I beg respectfully to present this list to their careful perusal and attention.

The long established and celebrated house of Dr. Trommsdorff having granted me extra facilities on their pure chemical products, I beg permission to present to my kind patrons the following low prices for rare and pure chemicals, prefacing the same with the observation, that as I have no trade for drugs, buyers will perceive that I have no temptations to substitute ordinary chemicals for *pure*; therefore, the following list is intended for only the best article of its kind of the sort named.

There is also added to the List of Chemicals, some few new styles of Apparatus which are not in my catalogue, and I beg to add that I am also making material reductions in such American-made articles as the lower prices of labor at this time warrant. For example: Combustion Furnaces, 25 Burners, quoted formerly at \$50.00 I now sell at \$40.00; ordinary Bunsen Burners, at \$7.00, net, the dozen, &c., &c.

PRICES OF GOODS.

Some of my old patrons have asked if there is a reduction in the best foreign goods. In reply, I beg to say that there is rather an advance abroad. The R. Berlin Factory have advanced prices from 30 to 50 per cent., and the best Bohemian Glass is advanced 10 to 15 per cent., while the duty within the past three years is about 10 per cent. more on tariff before that time. Hence, *reduction in prices* would likely mean *poorer goods*.

Buyers will kindly compare the German and Bohemian glassware as to quality, and as there is about 50 per cent. difference in cost abroad, any ordinary offer of discount is not likely to cover the difference in quality, any more than such discount will cover the difference between Semi and Royal Porcelain. By comparing, for example, the Bohemian Funnels No. 2318 with the German Funnels No. 2322. an approximation of the difference may be arrived at.

The genuine Bohemian *Flasks* and other glassware, may be distinguished from the German, French, and American by a delicate greenish tint across the tops of the vessels; other glass, French especially, being nearly white, or straw-color tint.

Again, the Beakers ordinarily quoted as 1/3 are identical in size with my 0/2, and those called 1/5 are identical with my 0/4, &c. —my estimate of capacities allowing for boiling. *The sizes named by me are the same as filled in Europe, and I am not responsible for sizes made up here by any other dealer.* A comparison will show that my prices are, and have been very low, and so of other goods

RECOMMENDATIONS,

Those of my patrons who have always taken an active interest in my success, will be pleased to learn that the Prize Medal has been awarded to me, alone, at the International Exhibition at Philadelphia, *over all competitors in the United States*, "for Pure and Rare Chemicals and Chemical Apparatus of excellent design and finish," by the Judges in the group comprising this class of goods. The Judges are: Charles A. Joy, Ph. D., Professor of General Chemistry, Columbia College, N. Y.; F. A. Genth, A. M. M. D., Professor of Analytical Chemistry, University of Pennsylvania, Philadelphia; Dr. J. Lawrence Smith, the celebrated Chemist of Louisville, Ky.; Prof. C. F. Chandler, Ph. D., M. D., LL.D., Professor of Analytical and Applied Chemistry, School of Mines, Pharmacy, &c.; Prof. J. W. Mallett, Ph. D., University of Virginia, and the following eminent gentlemen from Europe, viz.: Dr. William Odling, F. R. S., of Great Britain, chief among English chemists; R. Van Wagner, of Germany, Editor of the *Jahresbericht der Technologisches Chemie*; J. F. Kuhlman fils, of Lisle, France, probably the largest manufacturer of chemicals in the world; Prosper de Wilde, Belgium, and Emanuel Paterno, Italy, all of whom are justly celebrated in the scientific world. The award of which these renowned gentlemen have deemed my goods worthy, will, I trust, stimulate my countrymen to encourage all efforts to place this establishment on a par with any other abroad.

I have lately secured the assistance of Mr. R. T. Deakin, of Philadelphia (senior partner of the firm of R. T. Deakin & Co., Brass, Syringe, and Pump Makers,) who thoroughly learned his trade of working in brass apparatus of every kind in England, and whose work is well known to those who have used it to be of the very best character. He will take entire charge of all manufacture and repairing of brass apparatus, which will be guaranteed to be of the very best quality and workmanship.

ABBREVIATED TERMS AND TRADE MARKS, USED IN THIS WORK.

Sol.=Solution; Precc.=Precipitated; lb.=pound; oz.=ounce; dr.=drachm; gr.=grain; grm.=gramme; Mg.=Milligramme; C. C.=Centimeter; pt.=pint; qt.=quart; gal.=gallon; Opt.=best, next to pure; pure=next to C. P.; C. P.=Chemically pure; U. S. P.=United States Pharmacopœia; Puriss=extra C. P.; T=Trommsdorff's; M.=Merck's; Spec.=Specimen; Com'l=Commercial; com.=common; Sub.=Sublimed; F. F.=Forte Fortissimo, or very strong; F. F. F. F.=Double; Conc.=Concentrated; Fren. or F. T.=Fresenius' Test; Sp. Grav.=Specific Gravity; Am.=American.

COMPARATIVE TABLE OF WEIGHTS.

| | | |
|----------------------|---|--------------------------|
| 1 pound Avoirdupois, | = | 7000 grains. |
| 1 ounce “ | = | 437½ “ |
| 1 drachm, | = | 54.69 “ |
| 28.35 grammes, | = | 1 ounce Avoirdupois. |
| 31.10 “ | = | 1 “ Troy. |
| 453.60 “ | = | 1 pound Avoirdupois. |
| 1 “ | = | 15.43½ grains. |
| 100 “ | = | 3.53 ounces Avoirdupois. |
| 100 “ | = | 3.21½ “ Troy. |
| 1000 “ | = | 1 Kilo |
| 1 Kilo., | = | 2.20½ lbs. Avoirdupois. |

PRICE LIST.

A.

| | | |
|--|---------------------------|------|
| Acetone, C. P..... | Per oz., \$ | .30 |
| Acid, Acetic, U. S. P., Sp. Grav., 1047..... | Per lb., | .30 |
| “ Ditto, strictly C. P., Sp. Grav., 1047 U. S. P., same quality as Baufoy’s best Eng..... | Per lb., | .50 |
| “ Ditto, Acetic, Glacial..... | Per lb., \$1.25, Per oz., | .15 |
| “ Antimonic, C. P..... | “ | .15 |
| “ Arsenic..... | Per lb., \$1.50 “ | .15 |
| “ Arsenious, C. P..... | “ 1.00 “ | .10 |
| “ Ditto, Lump Coml., very com..... | “ .20 | |
| “ Boracic, C. P. fused, pow’d..... | “ | .15 |
| “ Benzoic, True..... | “ | .25 |
| “ Ditto, Com. Artificial..... | “ | .15 |
| “ Butyric, Puriss..... | “ | .40 |
| “ Camphoric, True..... | per oz., | 2.50 |
| “ Chloric..... | “ | |
| “ Carbazotic, Puriss..... | “ | 1.00 |
| “ Capronic..... | “ | 3.50 |
| “ Carbohc, White Cryst..... | Per lb., \$1.50 Per oz., | .15 |
| “ Ditto, Com’l..... | “ 1.00 “ | .10 |
| “ Chromic, C. P., Cryst..... | “ | .30 |
| “ Cresylic, C. P., Cryst..... | “ | .40 |
| “ Citric, C. P., Cryst... Puriss..... | Per lb., \$2.50 Per oz., | .20 |
| “ Formic, C. P..... | “ | .25 |
| “ Fluoric. See Hydrofluoric, in 1 oz. and 8 oz. bot- tles. | | |
| “ Gallic, Puriss..... | “ | .40 |
| “ Gallotannic..... | “ | .65 |
| “ Hippuric..... | “ | 3.00 |
| “ Hydriodic..... | “ | 1.25 |
| “ Hydrobromic..... | “ | .60 |

| | | |
|---|----------|-------|
| Acid, Hydrocyanic, U. S. P..... | Per oz., | \$.10 |
| “ Hydrofluoric, in gutta percha bottles, with bottle. | Per lb., | 2.25 |
| “ Hydrofluosilicic, C. P..... | “ | 1.00 |
| “ Hydrochloric. See Muriatic. | | |
| “ Hypophosphorous, Sol..... | Per oz., | .40 |
| “ Iodic, C. P..... | “ | 2.00 |
| “ Lactic, C. P., Conc..... | “ | .50 |
| “ Malic..... | “ | 1.50 |
| “ Margaric, C. P..... | Per dr., | .40 |
| “ Meconic..... | Per oz., | 8.00 |
| “ Mucic..... | “ | 1.00 |
| “ Molybdic, C. P., T..... | Per oz., | .50 |
| “ Muriatic, C. P., in 1 and 6 lb. bottles..... | Per lb., | .27 |
| “ Ditto, Com'l..... | “ | .06 |
| “ Ditto, special price for Carboy. | | |
| “ Nitric, C. P., 1 and 7 lb. bottles..... | “ | .35 |
| “ Ditto, Com'l. Per carboy, special prices..... | “ | .15 |
| “ Ditto, Fuming Red. C. P. (rare quality)..... | “ | 2.25 |
| “ Ditto, ditto, ditto..... | “ | 1.50 |
| “ Nitrohydrochloric, Pure..... | “ | .50 |
| “ Oxalic, C. P. T., according to quality..... | “ | 1.25 |
| “ Ditto, C. P., Am., very superior..... | “ | .50 |
| “ Ditto, Coml..... | “ | .25 |
| “ Oleic, C. P..... | Per oz., | 1.50 |
| “ Phosphoric, U. S. P..... | “ | .05 |
| “ Ditto, Glacial, C. P. T..... | “ | .20 |
| “ Phosphorous, C. P., Sol..... | “ | .10 |
| “ Phenic, Crystals, Pure..... | “ | .15 |
| “ Phosphomobybdic, Sol..... | “ | 1.00 |
| “ Phosphowolframic, Sol..... | “ | .80 |
| “ Pyrogallic, Leviss, C. P. T..... | “ | .80 |
| “ Ditto, Alb. Sub. Puriss..... | “ | .50 |
| “ Pyroligneous, Refined..... | Per lb., | 1.00 |
| “ Prussic, “ Scheeles”..... | Per oz., | .25 |
| “ Salicylic..... | “ | .50 |
| “ Pictric, True..... | Per oz., | .40 |
| “ Silicic, Pure Native, Pow'd..... | Per lb., | .25 |
| “ Ditto, C. P., Precc., T..... | Per oz., | .25 |
| “ Succinic, Pure Alb. Cryst..... | “ | .40 |

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|--|-------------|------|
| Acid , Stearic, Puriss., for delicate analysis..... | Per dr., \$ | .60 |
| “ Ditto, Com..... | Per oz., | .10 |
| “ Suberic..... | Per dr., | 1.75 |
| “ Sulphuric, C. P., 1 and 9 lb. bottles..... | Per lb., | .40 |
| “ Ditto, Com'l..... | “ | .06 |
| “ Ditto, Nord, in cans and bottles..... | “ | .35 |
| “ Ditto, per Carboy, special price. | | |
| “ Tannic, C. P., Leviss..... | Per oz., | .30 |
| “ Ditto, Pure..... | “ | .15 |
| “ Tartaric, Pure, Cryst..... | Per lb., | .75 |
| “ Ditto, C. P., for accurate analysis..... | “ | 1.75 |
| “ Ditto, Powdered, Com..... | “ | .60 |
| “ Titannic..... | Per dr., | .40 |
| “ Uric, C. P., Cryst..... | Per oz., | 1.25 |
| “ Uranic, Com..... | Per oz., | 1.25 |
| “• Valerianic..... | Per oz., | .60 |
| “ Vanadic, C. P..... | Per dr. | 8.00 |
| “ Wolframic. See Tungstic Acid..... | Per oz., | .40 |
| Alcohol , 95pr.c.; special price large quantity..... | Per gal. | 3.00 |
| “ Absolute..... | Per lb. | .80 |
| “ Ammoniated..... | “ | 1.00 |
| “ Amylic..... | “ | 2.50 |
| “ Methylic, nearly inodorous and free from Amylic Alcohol. This will be found to be an excellent and cheap substitute for Wine Alcohol in all heating operations. It possesses decidedly greater heating power than Wine Alcohol, and is recommended to the attention of all chemists and experimenters living where gas cannot be procured or used. Per gal., \$1.65, by the keg or cask..... | Per gal. | 1.40 |
| Albumen , from blood..... | Per oz. | .25 |
| “ “ milk..... | “ | .50 |
| “ “ eggs..... | “ | .20 |
| Aldehyde | Per oz., | .40 |
| Aluminium , Mett, foil..... | “ | 2.00 |
| “ “ wire..... | “ | 2.00 |
| “ Chloride, C. P..... | “ | .35 |

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|---|---------------------------|------|
| Aluminium , Fluoride. Native; see Minerals..... | Per lb., \$ | .50 |
| Alumina , Precc., Puriss., hydrated..... | Per lb., | 2.00 |
| “ Acetate..... | Per oz., | .30 |
| “ Bromide..... | Per oz., | .50 |
| “ Sulphate, Pure Cryst. Leviss..... | Per oz., | .20 |
| “ “ and Ammonia, Puriss..... | Per lb., | 1.00 |
| “ “ “ “ Crude, Com.... | “ | .10 |
| “ Ammonia, Cryst. and Pulv..... | “ | .25 |
| Alum , Potassa C. P. T..... | “ | .25 |
| “ Iron..... | Per oz., | .10 |
| “ Chrome, Cryst., Pure..... | “ | .10 |
| “ Ammonia, Ferric..... | Per lb., | 1.00 |
| Amber , small pieces..... | Per oz., | .20 |
| Ammonia , Aqua, Conc., U. S. P., 4½ lb. bottles..... | Per lb., | .35 |
| “ Liquor. F. F. F., 26½ per cent. of gas..... | Per lb., | .35 |
| | Per oz., | .05 |
| “ Spirits, U. S. P..... | Per lb., | .20 |
| “ Acetate, Cryst., C. P..... | Per oz., | .50 |
| “ Ditto, Sol., C. P..... | “ | .25 |
| “ Arseniate..... | “ | .30 |
| “ Benzoate, C. P..... | “ | .90 |
| “ Bichromate..... | “ | .40 |
| “ Bromide..... | “ | .35 |
| “ Carbonate, pure..... | Per lb., | .75 |
| “ Ditto, Com..... | “ | .60 |
| “ Citrate and Citrate Iron..... | Per oz., | .25 |
| “ Citrate..... | Per lb., | 2.50 |
| “ Gallate, pure..... | Per oz., | 1.50 |
| “ Hydrosulphide, Liq..... | Per lb., | .75 |
| “ Hydrofluorate, Cryst., C. P..... | Per oz., | 1.50 |
| “ Hypophosphite..... | “ | .30 |
| “ Molybdate, C. P., Cryst..... | “ | .75 |
| “ Monocarbonate, C. P..... | Per lb., | 1.50 |
| “ Chloride, C. P..... | “ | .50 |
| “ Ditto, Com'l..... | “ | |
| “ Nitrate, Cryst., C. P..... | Per lb., \$1.00, Per oz., | .10 |
| “ “ fused Am., Pure..... | Per lb., | .40 |
| “ Oxalate, C. P., Cryst..... | Per lb., \$1.80, Per oz., | .20 |
| “ Phosphate, Cryst., Pure..... | “ | .20 |

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|--|---------------------------|------|
| Ammonia , Succinate, T., Cryst. | Per oz., \$ | .80 |
| “ Sulphate, Com. | Per lb., | .12 |
| “ “ C. P. | “ | .70 |
| “ Sulphocyanide. | Per lb., \$3.00, Per oz., | .25 |
| “ Urate, C. P. | “ | .80 |
| “ Valerianate | “ | .80 |
| “ Vanadate. | Per gr., | .20 |
| Amygdalin | Per dr. | 2.75 |
| Amyle , Acetate | Per oz., | .50 |
| “ Butyrate | “ | .50 |
| “ Formate. | “ | .50 |
| “ Nitrite, Pure. | “ | .60 |
| “ Valerianate. | “ | .75 |
| “ Hydrochlorate. | “ | .75 |
| Amalgam , Mercury | Per box, | .75 |
| “ Fusible. | “ | .50 |
| Antimony , Chloride, Sol. | Per lb., | .40 |
| “ “ Cryst., C. P. | Per oz., | .40 |
| “ Iodide, Cryst., C. P. | “ | .90 |
| “ Proto Oxide, white, C. P. | “ | .15 |
| “ Golden Sulphide. | Per lb., | .75 |
| “ Black “ Levigated. Per lb., .35, Per oz., | | .05 |
| “ Ditto, Native. | Per lb., | .20 |
| “ Tartrate, Cryst., Pure. | “ | 2.00 |
| “ Ditto, and Tart Potassa | “ | 1.25 |
| “ Mett, Best. | “ | .20 |
| Aniline , Pure, Liq. | “ | 2.50 |
| “ Sulphate, C. P. | Per oz., | .75 |
| “ Red. | “ | .90 |
| “ Scarlet. | “ | |
| “ Blue. | “ | |
| “ Violet. | “ | |
| “ Pink. | “ | |
| “ Green. | “ | |
| “ Black. | “ | |
| “ Yellow. | “ | |
| “ Orange. | “ | |
| “ Purple. | “ | |
| Animal Charcoal , Gran., Best. | Per lb., | .10 |

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|------------------------------------|-------------|------|
| Animal Charcoal, Com. | Per lb., \$ | .08 |
| “ “ Pulv. Fine..... | “ | .10 |
| Arsenic, Native Mett. | “ | .50 |
| “ Pulverized | “ | .25 |
| “ Bromide..... | Per oz., | 1.25 |
| “ Iodide..... | “ | .75 |
| “ Chloride | “ | .80 |
| “ Oxide Proto. See Acids. | | |
| “ “ Per “ “ | | |
| “ Sulphide Per..... | Per lb., | .20 |
| “ “ Proto | “ | .25 |
| Argols, Crude | “ | .25 |
| “ Refined | “ | .30 |
| Asparagin, C. P. | Per dr., | .30 |
| Asphaltum, Opt. | Per lb. | .15 |
| Asbestos, Long Fibre | Per oz., | .15 |
| “ Short “ | Per lb., | .60 |
| Atropia, Pure | Per gr., | .06 |
| “ Sulphate | “ | .06 |

B.

| | | |
|-------------------------------------|------------------------|------|
| Barium, Chloride, Com. | Per lb., .20, Per oz., | .05 |
| “ “ C. P..... | “ .30, “ | .05 |
| “ “ Puriss., T..... | Per lb. | .40 |
| “ Fluoride | Per oz., | 1.00 |
| “ Mett., Spec..... | Per Gram. | 4.50 |
| “ Iodide, C. P..... | Per oz., | 1.00 |
| “ Hyperoxide, C. P., T..... | “ | .45 |
| “ Proto-oxide, “ | “ | .30 |
| “ Sulphide | “ | .10 |
| Baryta, Acetate | “ | .20 |
| “ Caustic, Cryst., C. P..... | Per lb., \$1.00, “ | .10 |
| “ Carb., Native..... | Per lb. | .25 |
| “ “ Precc., C. P., T..... | “ | .80 |
| “ Chlorate, C. P., T..... | Per oz., | .40 |
| “ Nitrate, Cryst., C. P..... | Per lb., | .50 |
| “ “ Com'l..... | “ | .30 |
| “ Sulphate..... | “ | .75 |
| “ “ Opt., Pure..... | Per oz., | .10 |

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|--|---------------------------|------|
| Baryta , Water, per fluid oz..... | Per oz., \$ | .05 |
| Beeswax , White..... | “ | .10 |
| “ Yellow | Per lb., | .75 |
| Berberine , Pure..... | Per oz. | 3.50 |
| “ Sulphate | “ | 4.25 |
| Benzoin , Gum..... | Per oz., | .10 |
| Benzole , Genuine..... | Per pt., | .60 |
| Benzine | “ | .15 |
| Bismuth , Mett..... | Per oz., | .75 |
| “ Ammoniocitrate..... | “ | .10 |
| “ Mett, Puriss..... | “ | .75 |
| “ Acetate, Pure..... | “ | .25 |
| “ Carb..... | “ | .75 |
| “ Chloride..... | “ | .30 |
| “ Oxide, Hydrated..... | “ | .75 |
| “ Nitrate, Cryst..... | “ | .40 |
| “ Sub. ditto, Powdered..... | “ | .50 |
| “ Tannate..... | “ | .80 |
| “ Valerianate, C. P..... | “ | 1.50 |
| Black Flux | Per lb., | 2.00 |
| Bone-Ash , Am. (by the bbl., or 50 lbs., or more, special price)..... | “ | .25 |
| “ French..... | “ | .40 |
| “ Washed..... | “ | .60 |
| Bleaching Powder | “ | .15 |
| Borax , Refined..... | “ | .16 |
| “ Glass..... | Per lb., \$3.00, Per oz., | .25 |
| “ Pulverized..... | “ | .10 |
| Brazil Wood , True..... | Per lb., | .25 |
| Bromoform , C. P..... | Per oz., | 2.50 |
| Bromine , Pure..... | “ | .25 |
| “ Chloride..... | “ | .75 |
| Brucia , C. P..... | Per oz. | 4.00 |
| “ Nitrate..... | “ | 4.50 |

C.

| | | |
|---|----------|-----|
| Cadmium , Mett, in stick; Pure, T..... | Per oz., | .25 |
| “ “ Ribbon..... | “ | .75 |
| “ Bromide..... | “ | .05 |

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|----------------------|--------------------------------|-----------------|-------|
| Cadmium, | Carbonate | Per oz., \$ | .75 |
| " | Chloride..... | " | .60 |
| " | Iodide..... | " | .75 |
| " | Sulphide..... | " | 1.00 |
| " | Oxide..... | " | .75 |
| " | Sulphate..... | " | .40 |
| Caffeine, | Pure; very superior..... | " | 4.50 |
| " | Citrate..... | Per oz., | 5.00 |
| Casein, | " Pure..... | Per oz., | .10 |
| Calcium, | Mett, per Spec..... | Per gram. | 10.00 |
| " | Acetate, C. P..... | Per oz. | .15 |
| " | Carb., Precc.; Pure..... | Per lb., | 1.50 |
| " | Chloride, Fused; C. P., T..... | " | 1.00 |
| " | " Gran'l "..... | " | .50 |
| " | " Cryst. "..... | " | .25 |
| " | Bromide, Pure..... | Per oz., | .30 |
| " | Iodide..... | " | .50 |
| " | Nitrate, C. P., Cryst..... | " | .20 |
| " | Fluoride, Pow'd..... | Per lb., | .10 |
| " | " Cryst., native selected..... | " | .30 |
| " | Phosphide, Pure, T..... | Per oz. | .65 |
| " | Phosphate..... | Per lb. \$2.00, | " .25 |
| " | Sulphide..... | " | .08 |
| Camphor, | Best Borneo..... | " | .07 |
| Carbon, | Bisulphide..... | Per lb., | .50 |
| " | Trichloride, Liquid..... | Per oz., | 1.25 |
| Carbo, | Animalis..... | Per lb., | .10 |
| Carmine, | Opt..... | Per oz. | 1.00 |
| Cerium, | Mett, per specimen..... | Per gram. | 7.50 |
| " | Chloride..... | Per oz., | 2.00 |
| " | Nitrate..... | " | 1.50 |
| " | Oxalate, Pure..... | " | 1.00 |
| Cæsium, | Chloride..... | Per Gram. | 6.00 |
| " | and Rubidium, Chloride..... | Per gr. | .25 |
| Cethyle | | Per lb., | 1.00 |
| Chameleon, | Mineral, Pure..... | Per oz., | .12 |
| Chloral, | Hydrate..... | " | .25 |
| Chlorine, | Aqueous Sol. of..... | Per lb., | .15 |
| Charcoal, | Willow, Pow'd, Pure..... | " | .35 |

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|---|---------------------------|-------|
| Charcoal , Willow, Prepared in blocks..... | Each, \$ | .10 |
| Chloroform , Opt..... | Per lb., \$1.25, Per oz., | .20 |
| Chromium , Mett..... | Per gram. | 1.20 |
| Chrome , Alum. See Alums. | | |
| Chromium , Chloride, C. P..... | Per oz., | 2.50 |
| " Sesqui Chloride..... | " | .40 |
| " " Oxide..... | " | .30 |
| " Green " | " | .30 |
| " Carb..... | " | 1.00 |
| Cinnabar . See Minerals. | | |
| Copper , Acetate, C. P., Cryst. T..... | " | .15 |
| " " Com., Pulv'd..... | " | .05 |
| " Arseniate. C. P. T..... | " | .40 |
| " Arsenite..... | " | .25 |
| " Ammoniated, C. P., T..... | " | .20 |
| " Carbonate, C. P., Precc..... | " | .15 |
| " Chloride, C. P., T..... | " | .50 |
| " " Di. " | " | .25 |
| " Chromate..... | " | .20 |
| " Cyanide, C. P..... | " | .50 |
| " Formate..... | Per dr., | .40 |
| " Iodide, C. P..... | Per oz., | .75 |
| " Nitrate, Cryst., C. P., T..... | Per lb., \$1.00, | " .10 |
| " Oxalate..... | " | .25 |
| " Oxide, C. P., Gran. Pow'd, T.. | Per lb., \$2.50, | " .25 |
| " " Pure, Pow'd, | " 2.00, | " .15 |
| " Reduced Puriss, Pow'd..... | " | .35 |
| " Mett, Pure Gran..... | Per lb., \$1.85, | " .15 |
| " " Thin Foil, Pure..... | " .75 | " .10 |
| " Sheet..... | " .65 | " .08 |
| " Scraps..... | " .50 | " .06 |
| " Turnings..... | " .40 | " .05 |
| " Sulphate, C. P., T..... | " .45 | " .10 |
| " " Com'l..... | " .15 | " .05 |
| " Ammoniated. C. P. T..... | " | .15 |
| " Sulphide..... | " | .12 |
| Cobalt , Acetate, C. P..... | " | .75 |
| " Mett, Cubes..... | " | 1.25 |
| " " C. P., T..... | " | 2.50 |

| | | |
|--|----------------|------|
| Cobalt, Chloride, C. P., T..... | Per oz., \$ | .60 |
| “ Carb., C. P., T..... | “ | .75 |
| “ Nitrate, C. P., T..... | “ | .65 |
| “ “ C. P., Sol. F. T..... | “ | .40 |
| “ Oxalate, C. P., T..... | “ | 1.00 |
| “ Oxide, C. P..... | “ | 1.00 |
| “ “ Com'l..... | “ | |
| Codeia, Pure..... | Per dr., | 1.00 |
| Collodion, E. Sol..... | Per oz., | .18 |
| “ Cotton. Best Parry's..... | “ | .75 |
| Conine, Pure German..... | Per dr., | .75 |
| Cream Tartar, Pow'd..... | Per lb., | .50 |
| Creasote, White..... | Per oz., | .15 |
| Crocus-Martis, | Per lb., .12 “ | .05 |
| Cryolite, Best. See also Minerals... Per lb., | .25 to .50 | |

D.

| | | |
|-----------------------------------|-----------|------|
| Dextrine, Opt., Pow'd..... | Per lb., | .20 |
| Distilled Water | Per gal., | .20 |
| Dutch Leaf | Per book | .10 |
| Didymium, Chloride..... | Per gram. | 7.00 |

E.

| | | |
|------------------------------|----------------------|------|
| Ether, Sulphuric..... | Lot, .60... Per lb., | .90 |
| “ “ Veritable, Conc..... | “ | 1.35 |
| “ Acetic, Pure Conc..... | Per oz., | .10 |
| “ Butyric..... | “ | .30 |
| “ Chloric..... | “ | .20 |
| “ Formic..... | “ | .40 |
| “ Nitric, Spirits of..... | Per lb., | 1.25 |
| “ Oneanthic, Pure..... | Per oz., | 8.00 |
| Emery, Flour..... | Per lb., | .25 |
| “ Pow'd..... | “ | .20 |

F.

| | | |
|--|----------|-----|
| Fehling's Sol., for physicians' and sugar-house use, indicating percentage of grape sugar..... | Per oz., | .12 |
| Felspar, Pow'd, White..... | Per lb., | .15 |
| “ Native, Cryst..... | “ | .10 |

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|--|-------------|------|
| Fire Clay, Fine | Per lb., \$ | .10 |
| Fluor Spar, Cryst. | " | .15 |
| " " Pow'd..... | " | .10 |
| Formyle, Chloride | Per oz., | .20 |
| " Bromide..... | " | 2.50 |
| " Iodide..... | Per dr., | .50 |
| Fusible Metal | Per oz., | .40 |
| Fusel Oil, Pure | Per lb., | 1.00 |
| Fruit Essences, Artificial; all varieties kept. | | |

G.

| | | |
|--|----------|-------|
| Galena, Fine, for Blow-pipe work | " | .30 |
| Galls, Ground | Per oz., | .05 |
| " Tincture of..... | " | .15 |
| Glass of Borax | " | .25 |
| Glucina, Carbonate | Per dr., | 1.50 |
| " Hydrate..... | " | 1.50 |
| Glucose, in lumps | Per lb., | .15 |
| Glycerine, Puriss.; water free, T | " | .70 |
| " Best American; very fine; free from lead and all earthy matters..... | " | .50 |
| Gum, Arabic, picks ... | " | .75 |
| " " sorts..... | " | .50 |
| " Benzoin..... | Per oz., | .10 |
| " Tragacanth..... | " | .10 |
| Gums, of all kinds, at lowest market rates. | | |
| Gold, Chloride, Sol | " | 2.00 |
| " Ditto, Dry, Pure, 15 gr. bottles..... | " | 25.00 |
| " Oxide..... | " | 35.00 |
| " Metallic Leaf, xx Deep, Per book,..... | | .75 |
| Graphite, Pow'd. Pure T | Per lb., | 1.00 |
| " In Lump..... | " | .25 |
| Gutta Percha. Pure. In Sticks | Per oz., | 1.00 |
| Gypsum, Pulv | Per lb., | .10 |
| Gelatine, Pure | Per oz., | .15 |

H.

| | | |
|---------------------------|-----------|-----|
| Hæmatoxyline | Per. gr., | .08 |
|---------------------------|-----------|-----|

I.

| | | |
|--|---------------|-------|
| Indigo , Pure, Best Bengal..... | Per oz., \$ | .15 |
| “ Sulphate Sol..... | “ | .10 |
| Iodine , Pure, Resublimed, T..... | “ | .50 |
| “ Crude..... | “ | .40 |
| Iridium , Mett..... | Per gram. | 2.50 |
| “ Chloride..... | “ | 1.80 |
| Iridosmium | “ | .50 |
| Indium , Mett..... | “ | 6.50 |
| Iron , by Hydrogen, Pure..... | Per oz., | .15 |
| “ Pulv., Sub., Pure..... | “ | .10 |
| “ Wire, Pure... .. | “ | .20 |
| “ Acetate..... | “ | .40 |
| “ Ammoniated..... | “ | .10 |
| “ Limatura, Alcoholized..... | “ | .05 |
| “ Arseniate..... | “ | .40 |
| “ Bromide..... | “ | .35 |
| “ Carbonate, Precc. T..... | Per lb., .60, | “ .10 |
| “ “ Proto, Precc..... | “ | .15 |
| “ Chloride, Sesqui, Sol..... | Per lb.. .60, | “ .06 |
| “ “ “ Fine Cryst., C. P.. | “ \$1.00, | “ .10 |
| “ “ “ Proto..... | “ .75, | “ .10 |
| “ Chromate, Native..... | Per lb., | .25 |
| “ Citrate, U. S. P..... | Per oz., | .15 |
| “ “ and Ammonia..... | “ | .15 |
| “ “ and Manganese..... | “ | .20 |
| “ “ and Magnesia..... | “ | .20 |
| “ Ferrocyanide, Pure..... | “ | .12 |
| “ “ Com..... | “ | .10 |
| “ Filings..... | Per lb., | .10 |
| “ Iodide, C. P..... | Per oz., | .50 |
| “ “ Com..... | “ | .40 |
| “ Lactate, Pure... .. | “ | .20 |
| “ Oxide, Hydrated Peroxide..... | Per lb., | 1.50 |
| “ “ Proto..... | Per oz., | .10 |
| “ “ Red Oxide, Precc..... | Per lb., | 1.20 |
| “ “ Black Oxide, C. P..... | Per oz., | .15 |
| “ “ “ Com'l..... | Per lb., .75, | “ .10 |

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|-------------------------------------|------------------------------|-----|
| Iron, Nitrate, Per. Sol..... | Per lb., \$.50, Per oz., \$ | .10 |
| “ Phosphate, Proto..... | “ .60, “ | .10 |
| “ “ Per..... | “ 1.00 “ | .15 |
| “ Pyrophosphate, in Plates..... | “ | .15 |
| “ Sulphate, C. P., Cryst..... | Per lb., | .09 |
| “ “ Dried..... | “ | .18 |
| “ “ and Ammonia, C. P..... | “ | .20 |
| “ “ and Potassa..... | Per lb., .80, Per oz., | .10 |
| “ “ Sub., Pure..... | “ | .15 |
| “ Sulphide, Fused, Opt..... | Per lb., | .20 |
| “ “ Gran..... | “ | .30 |
| “ Tannate, Pure..... | Per oz., | .40 |
| “ Tartrate..... | “ | .20 |
| “ “ and Ammonia..... | “ | .15 |
| “ Tersulphate, Sol., Opt..... | Per lb., | .60 |
| “ “ and Potassa..... | Per oz., | .15 |
| “ Tungstate..... | Per lb., | .40 |
| “ Valerianate..... | Per oz., | .60 |

J.

Jalapine,..... Per oz., 2.00

K.

Kermes, Mineral..... Per lb., 2.50
Kaolin, Pure, White..... “ .15
Kreatine..... Per gram. 5.00

L.

Lead, Acetate, C. P., T..... Per lb., .75
 “ “ Com'l..... “ .50
 “ “ Tribasic..... Per oz., .40
 “ “ Sub., Sol..... Per lb., .40
 “ Bichromate, Pure..... Per oz., .25
 “ Carb., Neutral..... Per lb., .35
 “ “ Native. See Minerals.
 “ Chloride, C. P..... Per oz., .10
 “ Chromate, for Organic Analysis..... “ .15
 “ Hyposulphite..... “ .10
 “ Iodide..... “ .40

| | | |
|--|-------------|------|
| Lead , Mett. C. P., in drops, for Assay purposes. | Per lb., \$ | .75 |
| “ Nitrate, Pure. | “ | .70 |
| “ Oxide, Red. | “ | 1.00 |
| “ “ Proto. Pure. | “ | .25 |
| “ “ | Per oz., | .10 |
| “ Phosphate, Pure. | “ | .30 |
| “ Sulphate, C. P. | Per lb., | .50 |
| “ Tartrate, Pure. | Per oz., | .20 |
| “ Tannate | “ | .25 |
| Lithia , Carbonate, C. P. | “ | 1.50 |
| “ Citrate | “ | 1.25 |
| “ Sulphate. | “ | 1.50 |
| Lime , Chloride, Com'l. | Per lb., | .20 |
| Lithium , “ C. P. | Per oz., | 1.50 |
| “ Bromide | Per oz., | 1.20 |
| “ Iodide | “ | 1.25 |
| Litmus . In Cubes, Pure. | “ | .10 |
| “ Paper, Blue and Red. | Per sheet, | .05 |
| Logwood . In Chips. | Per lb., | .10 |
| “ Extract. | Per oz., | .10 |
| “ In Billets | Per billet, | .50 |
| Lupiline | Per oz., | .10 |
| Lycopodium | “ | .10 |

M.

| | | |
|---|------------------|------|
| Magnesia , Caustic. C. P. T. | Per lb., | 2.00 |
| “ Carbonate, Precc. | Per oz., | .15 |
| “ Native. See Minerals. | | |
| “ Citrate, Pure. | Per lb., | .20 |
| “ Nitrate. | Per oz., | .20 |
| “ Hypophosphite. | “ | .75 |
| “ Phosphate. | “ | .40 |
| “ Sulphate, C. P. | Per lb., | .30 |
| “ Valerianate | Per dr., | .30 |
| “ Sulphate, Com'l. | Per lb., | .10 |
| “ Sulphite | Per oz., | .10 |
| Magnesium , Ribbon. | Per foot, .05, “ | 3.75 |
| “ Wire. | “ .05, “ | |
| “ Bromide. | “ | 1.00 |

| | | |
|--|-----------------|---------|
| Magnesium, Iodide | Per oz., | \$ 1.00 |
| .. Chloride, C. P..... | Per lb., | .30 |
| Manganese, Mett | Per gram. | 1.00 |
| .. Acetate..... | Per oz., | .30 |
| .. Bromide..... | " | 1.25 |
| .. Carbonate. T..... | " | .35 |
| .. Citrate..... | " | .25 |
| .. Per Oxide; high test; Pulv..... | Per lb., | .10 |
| .. Chloride, Pure..... | Per oz. | .20 |
| .. Hypophosphite | Per oz., | .65 |
| .. Iodide..... | " | 1.10 |
| .. Phosphate..... | " | .50 |
| .. Nitrate..... | " | .35 |
| .. Sulphate, C. P., Cryst..... | Per lb., \$2.00 | " .20 |
| Mannite | Per dr., | .30 |
| Meconin | Per dr., | 2.50 |
| Morphia, Pure Alkaloid | Price, per oz., | 9.00 |
| .. Bimeconate..... | " " | 12.00 |
| .. Chloride | " " | 10.25 |
| .. Nitrate | " " | 12.00 |
| .. Sulphate..... | " " | 7.00 |
| .. Valerianate'..... | " " | 8.50 |
| Mosaic, Gold | Per oz., | .35 |
| Mercury, Redistilled, Best ,..... | Per lb., | 1.25 |
| in quantities, special price. | | |
| .. Acetate | Per oz., | .50 |
| .. Bromide..... | " | .50 |
| .. Chloride, Proto..... | " | .30 |
| .. " Per Am..... | " | .15 |
| .. Cyanide. T..... | " | .50 |
| .. Chloride, C. P. T., Per..... | " | .35 |
| .. Iodide, Proto..... | " | .55 |
| .. " Deuto..... | " | .50 |
| .. Oxide, Black..... | " | .50 |
| .. " Proto, Red..... | " | .25 |
| .. " Yellow..... | " | .35 |
| .. Sulphide, Black..... | " | .20 |
| .. " Red..... | " | .25 |
| .. Sulphocyanide..... | " | .35 |

| | | |
|---------------------------------------|---------------------------|------|
| Mercury, Sulphate, Basic | Per oz., \$ | .20 |
| " " Neutral..... | " | .35 |
| " Nitrate, Proto, T..... | " | .30 |
| " " Per. T..... | " | .45 |
| Methyline | Per lb., | 1.00 |
| Minium, Opt. | " | .15 |
| Microcosmic Salt, Pure | Per lb., \$1.50, Per oz., | .15 |
| Molybdenum, Mett. | Per gram, | .50 |
| " Oxide, C. P..... | Per oz., | .55 |
| " Sulphide..... | " | .60 |
| Menisperin, Pure | | 2.00 |

N.

| | | |
|--|---------------------------|-------|
| Naptha, Refined | Per lb., | .55 |
| " Wood..... | " | .75 |
| Naphaline, Pure, T. | Per lb., \$1.50, Per oz., | .20 |
| Narceia | Per dr., | 7.50 |
| Narcotine, C. P. | Per oz., | 2.50 |
| Nessler's Solution, for delicate Ammonia reactions, | | |
| | Per fluid oz., | .25 |
| Nickel, Mett, Cubes | Per oz., | .40 |
| " Carb, Pure..... | " | .75 |
| " Chloride, T..... | " | .75 |
| " Nitrate, C. P. T..... | " | .80 |
| " Oxalate, "..... | " | 1.00 |
| " Oxide..... | " | 1.00 |
| " Sulphate, C. P..... | " | .50 |
| " " and Ammonia..... | " | .75 |
| Nicotine | " | 16.00 |
| Nitrobenzol | Per oz., | .15 |

O.

Ores and Minerals. See Minerals and Fossils.

| | | |
|--|-----------|------|
| Osmium, Mett. | Per gram, | 3.50 |
| Olive Oil, True | Per pt., | .60 |
| Oils, Essential; all varieties kept; True | | |
| " Rapeseed..... | Per pt., | .50 |

P.

| | | |
|---------------------------------------|--------------------------|-------|
| Palladium, Mett | Per gram. | 3.00 |
| " Chloride, 1 dr. bottles..... | dr., | 7.00 |
| Parafine, Opt., Pearl | Per lb., | .40 |
| Phosphorus. In Sticks..... | Per lb. \$1.50, Per oz., | .15 |
| " Amorphous..... | " | .30 |
| " Chloride..... | Per dr., | .75 |
| Pancreatine | Per oz. | .75 |
| Picrotoxine, Pure | Per oz., | 12.00 |
| Pyroxilic Spirit, Pure | Per qt., | .50 |
| Piperine | Per oz., | 1.30 |
| Pepsine, Best, Refined | Per oz., | 1.25 |
| Phloridizine | " | 3.50 |
| Platinum, Chloride, Sol | Per oz., | .75 |
| " " Dry, T..... | " | 7.50 |
| " " and Sodium..... | " | 7.00 |
| " Sponge..... | Per gr., | .03 |
| " " for Hydroplatinic Lamp..... | Each, | .25 |
| " Wire..... | Per gr., | .2½ |
| " Sheet..... | " | .2½ |
| " Plate..... | " | .03 |
| Potassa, Acetate, Pure | Per oz., | .10 |
| " Antimoniate..... | " | .30 |
| " Arseniate..... | " | .10 |
| " Arsenite..... | " | .10 |
| " Bicarbonate, C. P. T..... | Per lb., | .50 |
| " " Com'l..... | " | .10 |
| " Bichromate..... | " | .25 |
| " " Puriss..... | Per lb. \$1.00, Per oz., | .10 |
| " Binoxalate..... | " | .30 |
| " Boro-Tartrate. T..... | " | .15 |
| " Bisulphate, C. P. T..... | Per lb., | .60 |
| " Bitartrate, Cryst..... | " | .50 |
| " " Puriss, T..... | " | 1.00 |
| " " Pow'd..... | " | .40 |
| " Bromide..... | Per oz., | .15 |
| " Carbonate, C. P., Sicc..... | Per lb., | 2.00 |
| " " Com..... | Per lb., | .20 |

| | | | |
|-----------------|-------------------------------------|-----------------|--------------|
| Potassa, | Carbonate and Carb. Soda, C. P..... | Per lb., \$ | 2.00 |
| " | Caustic, Fused, White, C. P. T..... | " | .60 |
| " | " " " Brown..... | " | .50 |
| " | " " " C. P., Am..... | " | .75 |
| " | " " " Dep. Alcohol, Puriss..... | " | 2.00 |
| " | Chlorate, Cryst., Best..... | " | .40 |
| " | " " Puriss..... | " | 1.00 |
| " | Chromate, Puriss..... | Per lb., \$1.50 | Per oz., .15 |
| " | " " Com..... | Per lb., | .60 |
| " | Citrate..... | Per oz., | .15 |
| " | Cyanide, Fused, Alb., Opt..... | " | .15 |
| " | " " " In 10 lb. cans..... | Per lb., | .80 |
| " | " " " C. P. T., Per lb., | Per oz., | .75 |
| " | Chloride, C. P., T..... | " | .10 |
| " | Ferrocyanide, Pure..T..... | " | .15 |
| " | Ferridcyanide " . T..... | " | .25 |
| " | Fluoride, C. P., T..... | " | .75 |
| " | Hypochlorate..... | " | .40 |
| " | Hypophosphite..... | " | .25 |
| " | Iodide, Pure Cryst(variable price) | " | .30 |
| " | " Fused Puriss, T..... | " | .75 |
| " | Iodate..... | " | |
| " | Hypermanganate..... | " | .20 |
| " | Manganate..... | " | .15 |
| " | Lactate..... | " | 1.00 |
| " | Liquor..... | Per lb., .40 | " .10 |
| " | Nitrate Cryst..... | Per lb., | .20 |
| " | " C. P., Gran..... | " | .50 |
| " | Phosphate, Pure..... | " | 2.50 |
| " | Nitrite, Pure, T.... in sticks..... | Per oz., | .30 |
| " | Oxalate..... | " | .20 |
| " | " Bin..... | " | .10 |
| " | Pictrate, very scarce..... | " | 2.50 |
| " | Silicate, Sol., C. P., T..... | " | .05 |
| " | " Dry " "..... | Per lb. | .60 |
| " | Sulphate, Cryst., Pure..... | Per lb., | .50 |
| " | " Pulv..... | " | .16 |
| " | Sulphite, Cryst..... | Per oz., | .45 |
| " | Sulphide, Fused C. P..... | " | .20 |

| | | |
|--|---|------|
| Potassa, Tartrate, Cryst. C. P. T..... | Per oz., \$ | .15 |
| Potassium. In $\frac{1}{4}$ oz. vials..... | Per oz., \$3.50, Per $\frac{1}{4}$ oz., | 1.00 |
| “ Sulphocyanide... C. P. T..... | Per oz., | .40 |
| Propylamin, Pure..... | Per oz., | 1.50 |
| “ Chloride..... | Per $\frac{1}{8}$ oz., | 6.25 |
| Proteine | Per oz., | |
| Prussian Blue..... | “ | .10 |

Q.

| | | |
|-------------------|----------|--------|
| Quinia, Pure..... | Per oz., | 4.25 |
| “ Acetate | Per oz., | 4.25 |
| “ Arseniate..... | “ | 6.00 |
| “ Chloride | Per oz., | 3.50 |
| “ Sulphate..... | Per oz., | “ 2.35 |

R.

Rare Resinoids—Podophyllin, Leptandrin, Cimicifugin, Macrotin, Almuine, Ampelopsine, Apocynin, Asclepidin, Baptisin, Barosmin, Caulophyll, Cerasine, Chelonine, Colocynthine, Cornine, Corydalia, Cypripedine, Digitalin, Dioscorein, Eryngine, Euonymine, Eupatoidin, Eupatorine, Eupurpurin, Fragerin, Gelseminine, Geranine, Hamamelin, Helonin, Humulin, Hydrastine, Hydrastin, Hydrastia Mur., Hydrastia Sulp., Hyoseyamine, Irisin, Jalapin, Juglandin, Lobelin, Menispermis, Myricin, Panduratin, Phytolacin, Populin, Prunine, Rhusin, Rumicin, Sanguinarina, Sanguinarina Sulph., Scutellarine, Senecionine, Stillingine, Trillin, Veratrin, Verbenine, Viburnin, Xanthoxylin:

| | | |
|---|------------|------|
| Rheine, Tilden's..... | Per oz., | 4.25 |
| Rhodium, Mett | Per gram. | 5.00 |
| Rubidium, Chloride..... | “ | .50 |
| Rhigoline, Inederos; Sp. Grav. 620..... | Per bott., | .75 |
| Ruthenium, Mett | Per gram. | 6.50 |

S.

| | | |
|------------------------|----------|--------------|
| Salicine | “ | Per oz., .50 |
| Sanguine, Best Fr..... | Per lb., | 1.25 |

| | | |
|---------------------------------------|-------------|------|
| Selenium | Per dr., \$ | .75 |
| Silicium | Per gram. | 4.00 |
| Santonin , Pure, Alkaloid..... | Per oz., | .75 |
| Silica , Fine ground..... | Per lb., | .15 |
| Silver , Mett Foil..... | Per oz., | 1.75 |
| “ Gran., Pure..... | “ | 2.50 |
| “ Leaf, “..... | Per book, | .25 |
| “ Acetate, Pure..... | Per oz., | 3.50 |
| “ Bromide..... | “ | 2.50 |
| “ Chloride..... | “ | 1.60 |
| “ Cyanide. Sol..... | “ | 2.50 |
| “ Carbonate..... | Per oz. | 3.60 |
| “ Iodide, Pure..... | Per oz., | 2.50 |
| “ Nitrate, C. P., Cryst..... | “ | 1.00 |
| “ Oxide..... | “ | 1.75 |
| “ Sulphate, Pure..... | “ | 3.00 |
| Soda , Acetate..... | Per lb., | 1.00 |
| “ Arseniate..... | Per oz., | .15 |
| “ Arsenite..... | “ | .10 |
| “ Bicarbonate, Eng., Best..... | Per lb., | .07 |
| “ “ C. P., T..... | “ | .60 |
| “ Bromide..... | Per oz., | .15 |
| “ Bromide, C. P..... | Per lb., | 1.50 |
| “ Biborate, Puriss..... | “ | 1.00 |
| “ Bisulphate, Pure..... | “ | .60 |
| “ Bisulphite, C. P..... | “ | 1.20 |
| “ Carbonate, Cryst., C. P., T..... | “ | .40 |
| “ “ Dried, Puriss., T..... | “ | .90 |
| “ “ Cryst., Com..... | “ | .05 |
| “ Caustic, White, by Lime, Fused..... | “ | .90 |
| “ “ Alcohol, Dep., C. P., T..... | “ | 2.00 |
| “ “ by Sodium..... | Per oz., | 1.25 |
| “ Chlorate, Cryst..... | “ | .25 |
| “ Chloride, Sol, U. S. P..... | Per bottle | .20 |
| “ “ Dried, C. P., T..... | Per lb., | .35 |
| “ Citrate, Pure..... | Per oz., | .25 |
| “ Fluoride..... | Per oz., | .75 |
| “ Iodide, Pure, Cryst..... | “ | .60 |
| “ Hyposulphite, C. P., T..... | Per lb., | .70 |
| “ Lime, Gran., C. P. T..... | “ | 1.00 |
| “ “ Pow'd, C. P. T..... | “ | 1.25 |

| | | |
|--|-----------------------|-------|
| Soda, Hyposulphite, Am., Opt..... | Per lb., \$ | .09 |
| “ Hypermanganate, C. P..... | Per oz., | .10 |
| “ Hydrosulphite. Cryst T..... | Per lb., | .75 |
| “ Hypophosphite..... | Per oz., | .75 |
| “ Iodate..... | “ | 2.00 |
| “ Lactate, Sol., Conc..... | “ | .60 |
| “ Phosphate, Cryst., C. P. T..... | Per lb., | .65 |
| “ Pyrophosphate..... | “ | 1.30 |
| “ Nitrate. Cryst, C. P..... | “ | .35 |
| “ “ “ Refined..... | “ | .20 |
| “ Pyrophosphate..... | Per oz., | .10 |
| “ Sulphite..... | Per lb., | .75 |
| “ Santonate..... | Per ^o oz., | 1.50 |
| “ Sulphocarbolate..... | “ | .30 |
| “ Silicate, Sol., 3 lb. bottles..... | Each, | .90 |
| “ Sulphate, Com'l..... | Per lb., | .04 |
| “ “ Pure..... | “ | .30 |
| “ Tungstate..... | Per oz., | .15 |
| Sodium, Mett..... | “ | .50 |
| “ Bromide... C. P. T..... | “ | .10 |
| “ Nitroprusside..... | “ | 2.00 |
| “ Sulphide, Fused..... | Per lb., | .80 |
| “ “ Cryst..... | “ | .15 |
| “ “ C. P..... | Per oz., | .10 |
| Solanine | Per dram. | 5.00 |
| Spermaceti, Pure..... | Per lb., | .35 |
| Spirits, Ammonia, U. S. P..... | “ | .35 |
| Strontium, Mett..... | Per gr. | .60 |
| Strontia, Carbonate, Prece..... | Per oz., | .10 |
| “ “ Caustic..... | “ | .30 |
| “ Chloride, C. P., T..... | Per lb., \$1.50 | “ .10 |
| “ Nitrate, Dried..... | Per lb., | .75 |
| “ “ Cryst. C. P. T..... | “ | 1.25 |
| “ Sulphate. See Minerals. | | |
| “ “ C. P. T..... | Per lb., | .75 |
| Strontianite. | | |
| Strychnia, Cryst., Pure..... | Per oz., | 3.00 |
| “ Acetate..... | “ | 3.50 |
| “ Chloride..... | Per dr., | .75 |

| | | |
|----------------------------|-------------|-----|
| Sulphur , Flos..... | Per lb., \$ | .08 |
| “ Roll | “ | .06 |
| “ Chloride | Per oz., | .25 |
| “ Iodide..... | “ | .45 |
| “ Precc., Pure..... | Per lb., | .25 |

T.

| | | |
|---------------------------------------|----------------------------|------|
| Tellurium , Mett..... | Per gram, | 1.50 |
| Thebaine , Pure..... | Per gr., | .50 |
| Theine , Pure, Alkaloid..... | Per dr., | 5.00 |
| Thallium | Per gram, | .50 |
| “ Chloride..... | “ | .50 |
| Thymol | Per oz., | 1.50 |
| Test Paper , Litmus, Blue..... | Per sheet, .05, Per quire, | .80 |
| “ “ Red..... | “ .05, “ | .80 |
| “ “ Neutral..... | “ .05, “ | .80 |
| “ Brazil Wood..... | “ .05, “ | .80 |
| “ Georgina..... | “ .06, “ | 1.00 |
| “ Guaicum..... | “ .06, “ | 1.25 |
| “ Turmeric..... | “ .05, “ | .80 |
| “ Sulphate, Manganese... .. | “ .05, “ | .80 |
| “ Schonbein's Ozone..... | Per pack, | .10 |
| “ Hydrosulphuric Acid.. | Per sheet, .05, Per quire, | .75 |
| Tin , Mett., in bars..... | Per lb., | .60 |
| “ “ Pure, in sticks..... | “ | 2.50 |
| “ Foil, Tissue..... | “ | 1.25 |
| “ Mett., Granulated..... | “ | 1.25 |
| “ Chloride, Pure, proto..... | “ | .75 |
| “ “ “ Liquid, non Aqueous..... | Per oz., | .50 |
| “ “ Crystals, Opt., T..... | Per lb., | 1.00 |
| “ “ “ Com'l | “ | .50 |
| “ Oxide, Pure, T..... | “ | 2.00 |
| “ Bisulphide..... | Per oz., | .25 |
| “ Sulphide, Proto..... | “ | .20 |
| Tungsten , Mett..... | Per gram, | .50 |
| “ Oxide..... | “ | .45 |
| Turmeric , Pow'd..... | Per oz., | .05 |
| Toluol . | | |

U.

| | | |
|--|----------|---------|
| Uranium , Acetate, Pure, C. P. | Per oz. | \$ 1.00 |
| “ Chloride “ | “ | 1.00 |
| “ Nitrate | “ | 1.00 |
| “ Sulphate | “ | 1.00 |
| “ Oxide | Per oz., | 1.00 |
| Urea , Cryst., Pure | “ | 1.25 |
| “ Nitrate | “ | 1.00 |

V.

| | | |
|---------------------------------|---|-----|
| Vermilliontrue..... | “ | .10 |
|---------------------------------|---|-----|

Z.

| | | |
|--|---------------------------|------|
| Zinc , Mett. | Per lb. | .20 |
| “ “ Puriss, Gran'l, T. | Per lb., | .50 |
| “ Acetate, Cryst., C. P. | Per lb., \$1.00, Per oz., | .10 |
| “ Gran'l, Com'l. | Per lb., | .25 |
| “ “ C. P., Arsenic, Free | “ | .60 |
| “ “ Bromide | Per oz., | .45 |
| “ Reduced, C. P., Puriss. | Per lb., | 1.25 |
| “ Chloride, Dry, Opt. | Per oz., | .10 |
| “ Carbonate, Pure, Precc. | Per lb., .35, Per oz., | .05 |
| “ Cyanide | “ | .30 |
| “ Ferrocyanide.... | “ | .30 |
| “ Hypophosphite | “ | 1.00 |
| “ Iodide..... | | .60 |
| “ Lactate | “ | .50 |
| “ Nitrate, Pure | “ | .30 |
| “ Oxide, Precc. | Per lb., | 1.25 |
| “ Phosphate | Per oz., | .30 |
| “ Phosphide..... | Per oz., | 1.30 |
| “ Sulphate, Com'l. | Per lb., | .10 |
| “ “ Puriss., T. | “ | .30 |
| “ Valerianate | Per oz., | .60 |
| Zirconium , Oxide, Pure | Per dr., | .50 |
| Zircons , Native. See Minerals. | | |

E. B. BENJAMIN,

No. 10 BARCLAY STREET, NEW YORK,

MANUFACTURER'S AGENT FOR

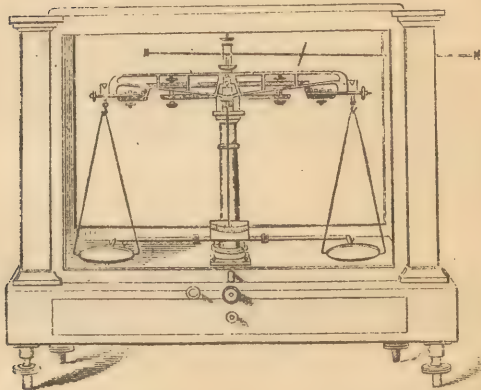
HENRY TROEMNER'S

STANDARD BALANCES AND WEIGHTS.

Established 1840, and used by all U. S. Mints and Assay Offices, and by the Canadian Government.

BALANCES OF PRECISION.

Analytical Balances.



No. 1. Analytical Balance, capacity 200 grammes in each pan, in fine polished glass case, beam divided in 1.10 milligrammes, sensible to 1-20 milligrammes. All agate bearings, with improved arrest for pans, and apparatus for specific gravity, &c., &c.
3 in. pans. Beam 14 in.
Price, \$105.00

No. 2. Analytical Balance, in fine polished glass case, capacity 100 grammes in each pan. Beam divided in half parts of milligrammes. Sensible to 1-10 milligrammes, with apparatus for specific gravity. All bearings agate.
3/4 in. pans. 12 in. Beam.
Price, \$86.00

No. 3. Analytical Balance, in French polished mahogany case, with counterpoised sliding door. Capacity 2000 grains, sensible to 1-100 grain. Steel bearings, movable.
3 1/2 in. pans, 10 in. beam.
Price, \$40.00

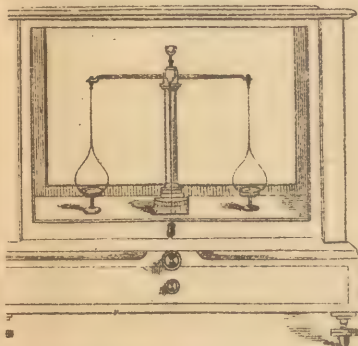
No. 4. Same Balance as No. 3, has attachment for rider and pan arrests. Beam graduated to one milligramme.
Price, \$50.00

Troemner Specific Gravity Scale.



Constructed after the plan of Dr. Mohr.
Price complete, \$20.00

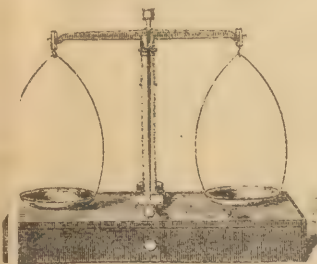
Assay Balances.



No. 1. French polished glass case, beam resting on agate bearings. Sensible to 1-20 milligrammes.
Price, \$55.00

No. 2. French polished glass case. Is arranged with rider apparatus and pan arrests. Open beam, divided in 10 divisions for one milligramme. Needle shows ten divisions.
Price, \$80.00

Analytical Scales. Fig. 22.



For weighing Ores, Minerals, Gold and Silver Coin, Jewelry, Chemicals, &c., &c.

On fine Polished Mahogany Box, with drawer. Lacquered Beam, with box ends, adjusting screws, movable pans, ivory indicator. Sensible to 1-20 grain. Price does not include weights.

| No. | Length of Beam. | Diam. of Pan. | Capacity. | Price. |
|-----|-----------------|---------------|-----------|---------|
| 1. | 14 in. | 6 in. | 25 oz. | \$24.00 |
| 2. | 10 " | 4 1/2 " | 16 " | 18.00 |
| 3. | 8 " | 3 " | 8 " | 15.00 |

Pans can be suspended by chains if desired.

Chemical Scales. Fig. 23.

For General Weighing.

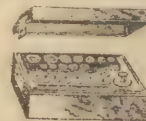


On polished box, with drop lever, especially constructed for laboratory use. Including weights.

| No. | Diam. of Pan. | Beam | Capacity. | Price. |
|-----|---------------|-------|-----------|---------|
| 1. | 5 in. | 9 in. | 32 oz. | \$15.00 |
| 2. | 4 " | 8 " | 16 " | 12.00 |
| 3. | 3 " | 7 " | 8 " | 10.00 |

Pans can be suspended by chains if desired.

Weights of Precision.



In fine velvet lined polished block. Weights lacquered and adjusted with the greatest care and precision.

| | |
|---|---------|
| 1 Platinum Gramme to 1 Mill., | \$ 6.00 |
| 1 " " 1-10 Mill., | 7.50 |
| 10 Gramme to 1 Mill., | 7.50 |
| 10 " " 1-10 Mill., | 8.50 |
| 50 " " 1 Mill. 3 Riders, | 10.50 |
| 100 " " " " " | 12.00 |
| 100 " " 1-10 Mill. 3 Riders, | 12.00 |
| 200 " " 1 Mill., | 15.00 |
| Gold Assay Weights, | 7.00 |
| All Riders weigh 10 Mill. unless otherwise ordered. | |

GRAINS.

| | |
|--|---------|
| 10 Platinum Grains to 1-10 Grain, | \$ 6.00 |
| 10 " " 1-100 Grain, | 6.00 |
| 10 " " 1-1000 Grain, | 7.00 |
| 100 Grains to 1-100 Grain, | 7.00 |
| 1000 Grains to 1-10 Grain, 3 Riders, | 10.00 |
| 1000 Grains to 1-100 Grain, 3 Riders, | 11.00 |
| 1000 Grains to 1-1000 Grain, 3 Riders, | 12.00 |
| 4 oz. Troy to 1-10 Grain, | 8.00 |
| Assay, Ton Weights. 4 A. T. to 1-20 A. T., | 6.50 |

Gramme Weights.

In Mahogany Block.

| | |
|---------------------------|---------|
| 500 Grammes, to 1 Gram., | \$ 8.00 |
| 500 Grammes, to 1 Centl., | 12.00 |
| 500 Grammes, to 1 Mill., | 14.00 |
| 1 Kilo. to 1 Gram., | 12.00 |
| 1 Kilo. to 1 Centl., | 16.00 |
| 1 Kilo. to 1 Mill., | 18.00 |
| 1 oz. Troy to 1-10 Grain, | 4.00 |
| 2 " " " " | 5.00 |
| 5 " " " " | 7.50 |
| 10 " " " " | 10.00 |

PLATINUM.

The increasing demand for the "non-blistering" Platinum, of which my establishment is the depot, has enabled the company which I represent to grant me extra facilities in this line of goods, and I would respectfully request a comparison of the quality of these goods with those sold elsewhere.

FRACTIONAL ELECTRICAL MACHINES.

I have nearly perfected arrangements for bringing forward a new Patent Electric Machine, yielding long sparks and adapted to the means of our academies and schools. The price will be about twenty-five dollars each. The larger electric machines *now made here* are materially reduced in price, in consequence of decline in cost of making.

BALANCES AND WEIGHTS

My patrons will receive herewith a list of Balances and Weights published by Henry Trøemner, which they will please substitute for those of Becker & Sons, published in my Catalogue of '72. Mr. H. Trøemner having appointed me a special agent here for his Analytical Balances and Weights, all sold by me are guaranteed fully equal to any sold in this country.

CHLORIDE OF CALCIUM TUBES.

Two Bulb with Interior Tube.....each, \$0.50



This is a new form of Chloride of Calcium Tube devised by Prof. Mixer, of Sheffield Scientific School, New Haven, and in use at that Institution. It is an improvement upon the old form of drying tube, the difference consisting in the addition of a small interior tube, reaching nearly across the smaller of the two bulbs. The advantage which it has over the old form can be seen at a glance, although no one can fully appreciate its usefulness without having used both styles. When in use, the gas is caused to flow from the smaller end to the larger one, the large bulb and tube being filled with the drying material, chloride of calcium.

During the passage of the hygrometric gas, the aqueous vapors condense for the most part, in the smaller bulb, only a comparatively small amount being carried over into the chloride of calcium. For this reason the latter may be used over again, and the operation repeated several times without refilling the tube.

The part which the small interior tube plays is, to keep the water which collects in the small bulb from running into the large one, a disadvantage to which the old form is subject. Furthermore, the tube may be used in an inclined or even vertical position without inconvenience, and still do excellent service.

The use of cotton may be dispensed with in this form of apparatus, as the very small bore of the interior tube will, if care be taken to select *lumps* of chloride of calcium (instead of the same *powdered*), prevent them from falling through into the small bulb.

RADIOMETERS.

Crookes'.....e.ach, \$7.50 to \$9



No. 3672.

The Radiometer, invented by Wm. Crookes, Esq., F. R. S., of England, and manufactured in its most elegant form by Dr. Geissler, of Germany, the manufacturer of the world-renowned "Geissler Tubes," (who has appointed me his agent for their sale), is shown in the accompanying figure *B*. It consists in the main of four radial arms of very thin metal, carrying at their extremities diamond-shaped pieces of a peculiarly light substance, the character of which varies somewhat in each manufactory. The system is delicately poised at its centre upon a needle fastened into the extremity of an upright rod of

glass, and kept from falling from the same by a vertical glass tube whose lower extremity projects over the cap of glass which rests upon the needle and upon which the arms are fastened. The whole is enclosed in a shell of glass, pleasing in design and strong enough to resist the pressure of the external atmosphere (for the apparatus is exhausted as perfectly as can be done by a sprengel pump, to obviate as much as possible the resistance which would be caused by the air).

Upon placing the apparatus in the sunlight, or allowing the light from a magnesium or electric light to fall upon it, the radial arms begin to revolve and continue to move as long as the light rays last, the velocity of the revolution increasing or decreasing in proportion to the intensity of the light.

PROF. RICHARDS' ASPIRATOR.

A substitute for the Bunsen Pump each, \$1 50



C represents the Aspirator invented by Prof. Robert H. Richards, of the Mass. Institute of Technology, Boston, and used for the purpose of quick filtration. It is the result of a number of careful experiments made by the above gentleman, and for simplicity of design and the ease with which it can be manipulated, together with its efficacy, it recommends itself to all who wish a good effective filter-pump, without being compelled to pay the high price which a more elaborate piece of apparatus would obviously command. In order to use this pump, all that is necessary to do is to connect the tube at the top with the faucet of an ordinary hydrant by means of a length of rubber tubing, whilst the filtering flask carrying the funnel is attached to the tube at the left of the pump. Upon allowing the water to flow through the latter, the air in the cylindrical

No. 3673. part surrounding the small interior tube is caught, as it were, by the water and drawn into the lower tube, thus producing a rarefaction of the air in the tube at the left and in the filtering flask. The result is a flow of water through the funnel and its contained precipitate, and a thorough washing of the latter. By continuing the working of the pump after washing the precipitate, the latter may be so completely dried as to be ready for ignition in a crucible, and the pump is also cleared well at the same time. As a certain ratio exists between the size of the orifice of the interior tube, the diameter of the exterior tube, and the force of water issuing from the hydrant, it will be necessary for parties ordering the apparatus of me to state the approximate fall and force of water at their command, that the pump may be made to correspond.

FUNNEL FOR RAPID FILTRATION.

Casamajor's modification of Carmichael's process. each, \$0 50 cents.



No. 3674.

This is represented at *D* as a small inverted funnel. The original funnel, as conceived by Carmichael, was made entirely of glass, with a bottom perforated with fine holes, these holes being produced, whilst the glass was in a state of semi-fluidity, by means of a red-hot needle. This being a very uncertain, if not an impossible undertaking, the idea occurred to Mr. P. Casamajor, of Williamsburgh, that by making use of a funnel provided with a movable bottom or diaphragm of platinum, the end might be attained. This funnel was tried and found to answer all that was required of it, and it is now offered to the chemist as a cheap,

efficient and very convenient apparatus for rapid filtration. It is made, as shown in the cut, of glass, with its stem bent at a right angle, the part shaped like a bell being provided with a circular disc of platinum perforated with fine holes. (The disc is not shown in the diagram.)

The *modus operandi* is as follows: The disc, whose diameter is about 20mm., is laid upon a piece of filter-paper (Swedish being generally preferred), and a circle of 25mm. is cut out of the latter, thus leaving a small margin all around the edge of the platinum. The latter is then separated from the paper and laid upon the funnel, completely covering the large opening. The paper is then moistened and laid over the platinum, covering it and extending over the edge all around, where it is brought in contact with the glass.

The Funnel is then connected by means of a rubber tube attached to its stem with the flask which is in turn put in communication with the filter pump. The mouth of the Funnel, which is quite small, is then placed in the platinum or porcelain vessel in which the precipitate is to be ignited, and the liquid containing the latter is poured into the vessel. Upon starting the pump, the filtration begins and is continued as long as necessary, the final result, after washing, &c., being a precipitate in the dish with a small disc of paper upon it, the ash of which, after ignition, may be disregarded. The upper edge of the Funnel holds a little of the precipitate which may be weighed with the Funnel itself.

IMPROVED FORM OF LIEBIG'S POTASH BULB.

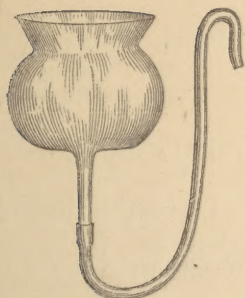
By Alvergniat Freres, Paris.....each, \$1.00



No. 3675.

This piece of apparatus is shown at *E*, and differs from what has always been known as Liebig's Potash Bulb in having the lower bulbs connected by curved instead of straight tubes: at the same time the circular bulbs at the side are replaced by pear-shaped ones, the latter as well as the extra length of tubing giving increased contact of gas and liquid and thereby increased absorption. Again, the extension of the tubes (at the lower part) to one side, forms a base of support so that the apparatus may be placed upon the pan of the balance and readily weighed without the trouble of attaching wires to the upper part, and *hanging* it to the beam.

These bulbs are used by many at present in preference to the older form, and bid fair, in time, to supersede them, for this is an age of progress as well in the chemical laboratory as anywhere else, and it is but natural for the analyst to select for his work those pieces of apparatus which can be most conveniently used while at the same time performing their work satisfactorily.



No. 3676.

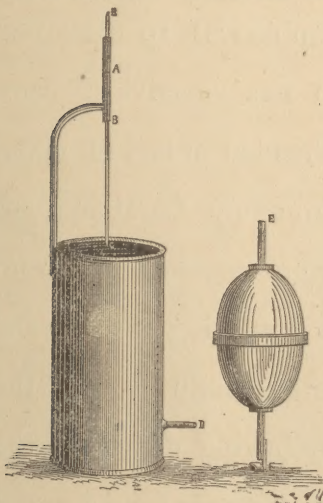
FILTER QUICK, CASAMAJOR'S

Each, \$0.75.

This Filter has been fully described in the August, 1875, number of the American Chemist, and is found to be very useful not only in Filtration, but also in thoroughly drying the precipitates afterwards.

CONSTANT WATER BATH LEVEL.

Each \$7.50



No. 3677.

The cut annexed represents a very useful copper apparatus, contrived by Dr. J. Lawrence Smith, of Louisville, to maintain a continued level of water in a series of water baths.

The outer vessel has an arm which sustains a glass pipette drawn at the lower end (C) and held in position by small pieces of caoutchouc tubing (A & B). This pipette passes through the metallic swimmer (E) placed within the above named vessel. Under the bottom of the swimmer is an elbow supporting a rubber cushion (F), which—when the swimmer is buoyed above the desired level—presses against the drawn point of the pipette and stops the flow of water. The top of the glass pipette (B) is united to the water supply, and the discharge tube (D)

projecting from the foot of the outer vessel, is connected with the water baths.

No. 3678.

IRON OXYGEN RETORT.

Price, \$4.00

Dr. Smith has also designed a very available iron retort for oxygen, consisting of a cap, five inches in diameter, fitting, by a water-groove into a base of same width. From the top of this cap a piece of ordinary iron gas pipe runs up eighteen inches ending in a gallows screw connection to attach to the receiver.

No. 3679.

PORCELAIN CONCENTRIC RINGS.

for use on small Evaporating Dishes ; as water Baths. Per set, \$1.25.

These rings are now very much used by the European Chemists, as they can be applied to any small vessel. Suitable for water Bath and also be used as supports over crystallizing Dishes and Jars.

Buyers cannot be too much impressed with the absolute advantage of purchasing direct from a responsible dealer in chemical apparatus, who understands the uses of such goods, and has a reputation at stake in his *special* line ; who has the *goods in stock* adapted to the purposes advertised, and has no occasion to provide any makeshift of supposed resemblances to catalogue illustrations. Very frequently I receive advices from chemists, stating that they have handed orders for apparatus, chemicals &c., selected from my Catalogue, to dealers near them, which goods were never bought from me by their agents, resulting in furnishing the chemist with poor apparatus, and reflecting unjustly on the character of my stock. Only by buying *direct* can the chemist be sure that his entire order comes from a dealer in chemical apparatus

Every intelligent chemist knows that the labor of preparing an analysis, is liable to be lost from the use of imperfect or badly annealed vessels, and will therefore avoid investing in poor articles because they may happen to be cheap.

